

From: Don\_Shepherd@nps.gov

To: bjackson02@fs.fed.us, baanderson02@fs.fed.us, chuber@fs.fed.us, Catherine\_Collins@fws.gov, csams@fs.fed.us,  
Dean\_Gillam@fws.gov, elhuffman@fs.fed.us, Holly\_Salazer@nps.gov, jlpeterson@fs.fed.us, jasorkin@fs.fed.us, John\_Notar@nps.gov,  
Patricia\_F\_Brewer@nps.gov, rgraw@fs.fed.us, Copeland@cira.colostate.edu, tim\_allen@fws.gov, twickman@fs.fed.us, Aaron  
Worstell/R8/USEPA/US@EPA, Amy\_Platt/R8/USEPA/US@EPA, Anita\_Lee/R9/USEPA/US@EPA, Anne\_McWilliams/R1/USEPA/US@EPA,  
Hans\_Buenning/R8/USEPA/US@EPA, Joe\_Kordzi/R6/USEPA/US@EPA, John\_Summerhays/R5/USEPA/US@EPA, Keith  
Rose/R10/USEPA/US@EPA, Larry\_Sorrels/RTP/USEPA/US@EPA, Laurel\_Dygowski/R8/USEPA/US@EPA, Michele  
Notarianni/R4/USEPA/US@EPA, Scott\_Bohning/R9/USEPA/US@EPA, Steven\_Rosenthal/R5/USEPA/US@EPA, Tim  
Smith/RTP/USEPA/US@EPA, Todd\_Hawes/RTP/USEPA/US@EPA, Thomas\_Webb/R9/USEPA/US@EPA, amalone@ndep.nv.gov,  
anew461@ecy.wa.gov, alan.schuler@alaska.gov, KHANA@michigan.gov, finneran.brian@deg.state.or.us, bhug@mde.state.md.us,  
Catherine\_Neuschler@state.mn.us, CSCHLI@state.wy.us, charles.martone@des.nh.gov, cdtaipal@cdphe.state.co.us,  
damcleod@deg.state.va.us, DPotte@wyo.gov, Elizabeth.Kuehn@state.nm.us, Glenn.Keith@state.ma.us, jmahinske@state.pa.us,  
Jessica.daniels@dc.gov, James.geier@state.co.us, Jonathan.Loftus@wisconsin.gov, lg@westgov.org, Marc.A.Cone@Maine.gov,  
Martin.Luther@ky.gov, Quincy.Styke@state.tn.us, rebecca.smith@alaska.gov, rick.boddicker@state.sd.us, Rob.Kaleel@Illinois.gov,  
Sara.Speser@ndeq.state.ne.us, Sheila.Holman@ncmail.net, tbachman@nd.gov, bmcbee@bentekenergy.com, MJAGUILA@GAPAC.com,  
phyllisfox@gmail.com, sahuron@earthlink.net, skodish@npca.org, tkinder@barr.com, stamper.vr@gmail.com,  
vpatt@environmentaldefense.org,  
Cc: Tammy\_Whittington@nps.gov

Date: 01/19/2011 04:50 PM

Subject: Fw: RAVI complaint and Regional Haze notice letters

fyi

Due to a filing glitch the documents will not be officially filed until tomorrow.

Don Shepherd  
National Park Service  
Air Resources Division  
12795 W. Alameda Pkwy.  
Lakewood, CO 80228  
Phone: 303-969-2075  
Fax: 303-969-2822  
E-Mail: don\_shepherd@nps.gov

----- Forwarded by Don Shepherd/DENVER/NPS on 01/19/2011 03:47 PM -----

Stephanie Kodish  
<skodish@npca.org>

>

To

01/19/2011 12:45  
PM

"john\_bunyak@nps.gov"  
<john\_bunyak@nps.gov>,  
"don\_shepherd@nps.gov"  
<don\_shepherd@nps.gov>

cc

Subject

RAVI complaint and Regional Haze  
notice letters

Hi Don/John,

Attached please find the complaint against DOI and DOI regarding outstanding RAVI petitions and two 60-day notice letters regarding the regional haze program submitted today to Administrator Jackson. I also attach NPCA's press release on the matter.

Please let me know if you have any questions.

Best,

Stephanie

(See attached file: notice letter SIPs FINAL 1-19-11.pdf) (See attached file: 2011 1-19 RAVI Petition complaint final.pdf) (See attached file: 2011 1-19 notice letter FIPs final signed.pdf) (See attached file: Regional Haze Lawsuits January 2011 Final.docx) *(See attached file: notice letter SIPs FINAL 1-19-11.pdf)* *(See attached file: 2011 1-19 RAVI Petition complaint final.pdf)* *(See attached file: 2011 1-19 notice letter FIPs final signed.pdf)* *(See attached file: Regional Haze Lawsuits January 2011 Final.docx)*

**Sherco Information****John Summerhays** to: Don\_Shepherd

02/14/2011 05:36 PM

Cc: Matthew Rau, Douglas Aburano, Steven Rosenthal, Todd Hawes

Attached is a letter we have drafted to send to Minnesota regarding its BART determinations. As drafted, this letter reflects staff's conclusion that we consider SCR to represent BART at Sherco. However, this letter also has almost none of the detailed information that would support this conclusion. In our discussions with Minnesota, they have emphasized that further discussions of this topic must revolve around detailed information that supports a conclusion different from the conclusion they reached. The most significant pertinent information is information that you developed, and so we are contacting you seeking to obtain that information.

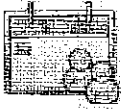
The most important pertinent information pertains to the cost effectiveness of SCR at Sherco. We have of course read the detailed comments you provided to Minnesota on the subject, but we still have questions on your findings. I understand that you have compiled the information relevant to Sherco in spreadsheet format, such that the most convenient and efficient means by which we could replicate your findings might be for us to obtain this spreadsheet. An alternative approach might be to have more detailed discussions on your analysis, again so that we could provide a more detailed defense of conclusions that, frankly, are based heavily on results that you have obtained.

As I said at the end of our Wisconsin call, I would like to have a call to discuss this next Tuesday. Our calendars are pretty free; I will propose a time of 10 a.m. MST (11 a.m. CST). However, I wanted in this message to provide some more detail as to what we would like to discuss, or at least to delineate the questions we have at this point. Thank you in advance for your help.



Draft Letter\_toMPCA\_Jan2011.doc





[Hide Details](#)

## Sherco Discussion

Tue 02/22/2011 11:00 AM - 12:00

PM

Rooms: R1819/R5 Metcalfe - 18th Floor@EPA



This entry has an alarm. The alarm will go off 20 minutes before the entry starts.

### Required

Don\_Shepherd@nps.gov, John Summerhays/R5/USEPA/US@EPA, Steven  
Rosenthal/R5/USEPA/US@EPA

### Optional

Douglas Aburano/R5/USEPA/US@EPA, Todd Hawes/RTP/USEPA/US@EPA

### Description

Conference call line: 1-866-299-3188, code: 312 353 5899#, time: 10 AM MT/Noon ET

Conference call to discuss the details of the NPS cost figures for the Sherco power plant in Minnesota .  
Specifically, EPA Region 5 is seeking details on the cost effectiveness for SCR control calculated for Sherco .



Re: MN BART Letter 

Matthew Rau to: Douglas Aburano

Cc: John Mooney, John Summerhays

03/01/2011 09:38 AM

Doug,

I worked on the letter yesterday and will have a revised draft ready today. I will also provide the Sherco control cost calculation spreadsheets.

-- Matt

Douglas Aburano	Matt: How's that letter coming along. Unless the...	02/28/2011 05:22:14 PM
-----------------	---	------------------------

From: Douglas Aburano/R5/USEPA/US  
To: Matthew Rau/R5/USEPA/US@EPA  
Cc: John Mooney/R5/USEPA/US@EPA, John Summerhays/R5/USEPA/US@EPA  
Date: 02/28/2011 05:22 PM  
Subject: MN BART Letter

---

Matt,

How's that letter coming along. Unless there's a reason for delay, I'd like a draft of this on Wednesday of this week. If there's something that's hanging it up, I'd like to know about it. It's coming up on five weeks since we had that call with MPCA and we need to get them something.

Thanks,

Doug

+++++

Douglas Aburano  
Chief, Control Strategies Section  
U.S. EPA - Region 5  
Phone: (312) 353-6960  
Fax: (312) 408-2279  
e-mail: aburano.douglas@epa.gov





**Additional Cost Information from Sherco**

Matthew Rau, John  
Neuschler, Catherine (MPCA) to: Summerhays, Douglas  
Aburano

03/23/2011 11:41 AM

Cc: "Jackson, Anne M (MPCA)", "Seltz, John S (MPCA)"

1 attachment



Xcel Additional Information 12.09.pdf

John, Matt, and Doug -

Per our discussion this morning, attached is some additional information concerning costs Xcel has encountered in the market for SCRs. We find this information to be fairly compelling, as it represents some additional real world information and experience.

Xcel shared this with us quite a while ago, so we could share it with you once we got down to really talking about these BART determinations. I probably should have sent it after our phone conversation prior to the draft letter, but I wasn't sure if we were really going down the road of discussing SCR costs or general consistency. As your concerns seem at this point to be primarily about costs, it seemed appropriate to share this letter at this time.

If you would like to discuss further once Matt is back in the office, let me know and we can set something else.

-Catherine

Catherine Neuschler  
Air Policy  
Minnesota Pollution Control Agency  
651-757-2607  
catherine.neuschler@state.mn.us





**Transport Rule and BART and RAVI**

**Douglas Aburano** to: John.Seltz

03/31/2011 09:15 AM

Cc: Catherine.Neuschler, John Mooney, John Summerhays, Matthew  
Rau

Hi John,

We appreciate the additional information on Sherco from Xcel that you passed along. There is another BART issue that I want to know your position on before we become too deeply involved with Sherco. You may recall that our draft letter mentioned that EPA will determine if the Transport Rule will produce visibility benefits that are better than BART. Such a finding would allow states subject to the Transport Rule to choose to satisfy most of the BART requirements by using the Transport Rule instead of source specific emission limits. Do you expect Minnesota to use the Transport Rule reductions in place of source specific reductions if it is allowed?

Also, the RAVI petition that was certified for Sherco may still require source specific action from EPA. This is something EPA will need to evaluate. Still, knowing your stance on using the Transport Rule will help us plan how to best use our resources.

Thanks,

Doug

+++++

Douglas Aburano  
Chief, Control Strategies Section  
U.S. EPA - Region 5  
Phone: (312) 353-6960  
Fax: (312) 408-2279  
e-mail: aburano.douglas@epa.gov





**Re: Additional Cost Information from Sherco**

Douglas Aburano to: Neuschler, Catherine (MPCA), Jackson,  
Anne M (MPCA), Seltz, John S (MPCA)  
Cc: Matthew Rau, John Summerhays

04/05/2011 11:21 AM

Catherine, Anne and John,

Would you be available for a call to discuss the draft letter, the additional information you've provided us with, and our options? We were hoping Thursday morning if that works for you. Maybe 10:00?

Thanks,

Doug

+++++

Douglas Aburano  
Chief, Control Strategies Section  
U.S. EPA - Region 5  
Phone: (312) 353-6960  
Fax: (312) 408-2279  
e-mail: aburano.douglas@epa.gov

"Neuschler, Catherine (MPCA)" John, Matt, and Doug - Per our dis... 03/23/2011 11:41:11 AM

From: "Neuschler, Catherine (MPCA)" <catherine.neuschler@state.mn.us>  
To: Matthew Rau/R5/USEPA/US@EPA, John Summerhays/R5/USEPA/US@EPA, Douglas Aburano/R5/USEPA/US@EPA  
Cc: "Jackson, Anne M (MPCA)" <anne.jackson@state.mn.us>, "Seltz, John S (MPCA)" <john.seltz@state.mn.us>  
Date: 03/23/2011 11:41 AM  
Subject: Additional Cost Information from Sherco

John, Matt, and Doug -

Per our discussion this morning, attached is some additional information concerning costs Xcel has encountered in the market for SCRs. We find this information to be fairly compelling, as it represents some additional real world information and experience.

Xcel shared this with us quite a while ago, so we could share it with you once we got down to really talking about these BART determinations. I probably should have sent it after our phone conversation prior to the draft letter, but I wasn't sure if we were really going down the road of discussing SCR costs or general consistency. As your concerns seem at this point to be primarily about costs, it seemed appropriate to share this letter at this time.

If you would like to discuss further once Matt is back in the office, let me know and we can set something else.

-Catherine

Catherine Neuschler  
Air Policy  
Minnesota Pollution Control Agency  
651-757-2607



catherine.neuschler@state.mn.us

[attachment "Xcel Additional Information 12.09.pdf" deleted by Douglas Aburano/R5/USEPA/US]





**RE: Additional Cost Information from Sherco**

Douglas Aburano to: Seltz, John S (MPCA)

04/05/2011 04:01 PM

Cc: "Jackson, Anne M (MPCA)", "Neuschler, Catherine (MPCA)", John Summerhays, Matthew Rau

I'm out Friday. Does any time tomorrow or Thursday work?

I've got a 9-10 meeting tomorrow and I'm in a meeting from 1:00-2:30 on Thursday. Not sure what John and Matt's schedules are like but John's in some of the same meetings.

Thanks,

Doug

+++++

Douglas Aburano  
Chief, Control Strategies Section  
U.S. EPA - Region 5  
Phone: (312) 353-6960  
Fax: (312) 408-2279  
e-mail: aburano.douglas@epa.gov

"Seltz, John S (MPCA)"

Catherine and I can make it at 10 but Anne...

04/05/2011 03:57:47 PM

From: "Seltz, John S (MPCA)" <john.seltz@state.mn.us>  
To: Douglas Aburano/R5/USEPA/US@EPA, "Neuschler, Catherine (MPCA)" <catherine.neuschler@state.mn.us>, "Jackson, Anne M (MPCA)" <anne.jackson@state.mn.us>  
Cc: Matthew Rau/R5/USEPA/US@EPA, John Summerhays/R5/USEPA/US@EPA  
Date: 04/05/2011 03:57 PM  
Subject: RE: Additional Cost Information from Sherco

Catherine and I can make it at 10 but Anne Jackson, who knows the most about the nuts and bolts at Sherco can't. How about 10 on Friday?

-----Original Message-----

From: Aburano.Douglas@epamail.epa.gov [mailto:Aburano.Douglas@epamail.epa.gov]  
Sent: Tuesday, April 05, 2011 11:22 AM  
To: Neuschler, Catherine (MPCA); Jackson, Anne M (MPCA); Seltz, John S (MPCA)  
Cc: Rau.Matthew@epamail.epa.gov; Summerhays.John@epamail.epa.gov  
Subject: Re: Additional Cost Information from Sherco

Catherine, Anne and John,

Would you be available for a call to discuss the draft letter, the additional information you've provided us with, and our options? We were hoping Thursday morning if that works for you. Maybe 10:00?

Thanks,

Doug

+++++

Douglas Aburano  
Chief, Control Strategies Section  
U.S. EPA - Region 5



Phone: (312) 353-6960  
Fax: (312) 408-2279  
e-mail: aburano.douglas@epa.gov

From: "Neuschler, Catherine (MPCA)" <catherine.neuschler@state.mn.us>  
To: Matthew Rau/R5/USEPA/US@EPA, John Summerhays/R5/USEPA/US@EPA,  
Douglas Aburano/R5/USEPA/US@EPA  
Cc: "Jackson, Anne M (MPCA)" <anne.jackson@state.mn.us>, "Seltz,  
John S (MPCA)" <john.seltz@state.mn.us>  
Date: 03/23/2011 11:41 AM  
Subject: Additional Cost Information from Sherco

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If you would like to discuss further once Matt is back in the office, let me know and we can set something else.

~Catherine

Catherine Neuschler  
Air Policy  
Minnesota Pollution Control Agency  
651-757-2607  
catherine.neuschler@state.mn.us

[attachment "Xcel Additional Information 12.09.pdf" deleted by Douglas  
Aburano/R5/USEPA/US]





**RE: Additional Cost Information from Sherco**

Neuschler, Catherine (MPCA) to: Douglas Aburano, Seltz, John S (MPCA)

04/05/2011 04:03 PM

Cc: "Jackson, Anne M (MPCA)", John Summerhays, Matthew Rau

Looks to me like 3 pm on Thursday would work for us.

~Catherine

-----Original Message-----

From: Aburano.Douglas@epamail.epa.gov [mailto:Aburano.Douglas@epamail.epa.gov]

Sent: Tuesday, April 05, 2011 4:01 PM

To: Seltz, John S (MPCA)

Cc: Jackson, Anne M (MPCA); Neuschler, Catherine (MPCA); Summerhays.John@epamail.epa.gov; Rau.Matthew@epamail.epa.gov

Subject: RE: Additional Cost Information from Sherco

I'm out Friday. Does any time tomorrow or Thursday work?

I've got a 9-10 meeting tomorrow and I'm in a meeting from 1:00-2:30 on Thursday. Not sure what John and Matt's schedules are like but John's in some of the same meetings.

Thanks,

Doug

+++++

Douglas Aburano  
Chief, Control Strategies Section  
U.S. EPA - Region 5  
Phone: (312) 353-6960  
Fax: (312) 408-2279  
e-mail: aburano.douglas@epa.gov

From: "Seltz, John S (MPCA)" <john.seltz@state.mn.us>  
To: Douglas Aburano/R5/USEPA/US@EPA, "Neuschler, Catherine (MPCA)" <catherine.neuschler@state.mn.us>, "Jackson, Anne M (MPCA)" <anne.jackson@state.mn.us>  
Cc: Matthew Rau/R5/USEPA/US@EPA, John Summerhays/R5/USEPA/US@EPA  
Date: 04/05/2011 03:57 PM  
Subject: RE: Additional Cost Information from Sherco

Catherine and I can make it at 10 but Anne Jackson, who knows the most about the nuts and bolts at Sherco can't. How about 10 on Friday?

-----Original Message-----



From: Aburano.Douglas@epamail.epa.gov [mailto:Aburano.Douglas@epamail.epa.gov]  
Sent: Tuesday, April 05, 2011 11:22 AM  
To: Neuschler, Catherine (MPCA); Jackson, Anne M (MPCA); Seltz, John S (MPCA)  
Cc: Rau.Matthew@epamail.epa.gov; Summerhays.John@epamail.epa.gov  
Subject: Re: Additional Cost Information from Sherco

Catherine, Anne and John,

Would you be available for a call to discuss the draft letter, the additional information you've provided us with, and our options? We were hoping Thursday morning if that works for you. Maybe 10:00?

Thanks,

Doug

+++++

Douglas Aburano  
Chief, Control Strategies Section  
U.S. EPA - Region 5  
Phone: (312) 353-6960  
Fax: (312) 408-2279  
e-mail: aburano.douglas@epa.gov

From: "Neuschler, Catherine (MPCA)"  
<catherine.neuschler@state.mn.us>

To: Matthew Rau/R5/USEPA/US@EPA, John  
Summerhays/R5/USEPA/US@EPA, Douglas Aburano/R5/USEPA/US@EPA

Cc: "Jackson, Anne M (MPCA)" <anne.jackson@state.mn.us>,  
"Seltz, John S (MPCA)" <john.seltz@state.mn.us>

Date: 03/23/2011 11:41 AM

Subject: Additional Cost Information from Sherco

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Per our discussion this morning, attached is some additional information concerning costs Xcel has encountered in the market for SCRs. We find this information to be fairly compelling, as it represents some additional real world information and experience.

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this letter at this time.

If you would like to discuss further once Matt is back in the office,  
let me know and we can set something else.

~Catherine

Catherine Neuschler

Air Policy

Minnesota Pollution Control Agency

651-757-2607

catherine.neuschler@state.mn.us

[attachment "Xcel Additional Information 12.09.pdf" deleted by Douglas  
Aburano/R5/USEPA/US]



**Call with FLMs**

John Summerhays to: Matthew Rau  
Cc: Steven Rosenthal, Douglas Aburano

04/15/2011 05:24 PM

---

History: This message has been replied to.

As per my forwarded phone message, please arrange a call with the FLMs to discuss regional haze in Minnesota. I am out Monday and Tuesday; Thursday is my preferred day, but in any case my calendar is available electronically. I would propose Thursday at 10, but a variety of times would work. If you want to have a pre-meeting to discuss Lea's/OGC's comments on RAVI BART, that might be good too. You can arrange for FLM participation through Trent Wickman, at 218-626-4372. They will want to know where we stand, and we can expect them (or at least Trent) to want to discuss which BART determinations we are prepared to accept, which ones we find problematic, and what process we expect the state to undertake on the taconite plants.



Re: Call with FLMS 

Matthew Rau to: John Summerhays

04/15/2011 05:29 PM

John,

Any time on Thursday works for me.

-- Matt

John Summerhays As per my forwarded phone message, please ar... 04/15/2011 05:24:23 PM

From: John Summerhays/R5/USEPA/US  
To: Matthew Rau/R5/USEPA/US@EPA  
Cc: Steven Rosenthal/R5/USEPA/US@EPA, Douglas Aburano/R5/USEPA/US@EPA  
Date: 04/15/2011 05:24 PM  
Subject: Call with FLMS

---

As per my forwarded phone message, please arrange a call with the FLMS to discuss regional haze in Minnesota. I am out Monday and Tuesday; Thursday is my preferred day, but in any case my calendar is available electronically. I would propose Thursday at 10, but a variety of times would work. If you want to have a pre-meeting to discuss Lea's/OGC's comments on RAVI BART, that might be good too. You can arrange for FLM participation through Trent Wickman, at 218-626-4372. They will want to know where we stand, and we can expect them (or at least Trent) to want to discuss which BART determinations we are prepared to accept, which ones we find problematic, and what process we expect the state to undertake on the taconite plants.





Re: Request for Regional Office review of BART EGU inventory  
Martha Keating to: Matthew Rau

06/03/2011 02:57 PM

History: This message has been replied to.

Hi Matt - thanks.

For the Presque Isle units: will they be shutdown by 2017? Any corrections on the other states? This is going final Monday COB to the modelers!

thanks

mk

Martha H. Keating  
Environmental Protection Specialist  
Geographic Strategies Group  
Air Quality Policy Division  
U.S. EPA, Office of Air Quality Planning and Standards  
MD C539-04  
RTP, NC 27711  
(919) 541-9407

Matthew Rau

Ms. Keating, For Region 5, we do not have a list...

06/02/2011 01:23:39 AM

From: Matthew Rau/R5/USEPA/US  
To: Martha Keating/RTP/USEPA/US@EPA  
Cc: John Summerhays/R5/USEPA/US@EPA, Steven Rosenthal/R5/USEPA/US@EPA  
Date: 06/02/2011 01:23 AM  
Subject: Re: Request for Regional Office review of BART EGU inventory

Ms. Keating,

For Region 5, we do not have a list of BART eligible EGUs except for Minnesota. The spreadsheet is generally correct for the Minnesota power plants. The discrepancy I noticed was that Virginia Public Utilities Boiler 9 is missing from the spreadsheet. The Minnesota facilities on the spreadsheet, including those in red, are all BART eligible and the Minnesota plant on the deleted unit list is also correct.

I was able to learn some corrections for the other Region 5 states from my colleagues. We think the Presque Isle (Michigan) units listed on the deleted list are actually not shut down, but is under a consent decree. Given our lack of specifics on the EGUs, let me suggest that we contact the states to confirm the list.

Thanks,  
Matt Rau  
Region 5

Martha Keating

Thanks in advance, everyone. One clarification:...

05/20/2011 01:25:47 PM

Michele Notarianni

Hello Regional Haze Workgroup: No later than J...

05/20/2011 12:47:55 PM





**{In Archive} MN Haze Letter**

John Summerhays to: Matthew Rau  
Cc: Douglas Aburano, Steven Rosenthal

06/16/2011 03:52 PM

From: John Summerhays/R5/USEPA/US  
To: Matthew Rau/R5/USEPA/US@EPA,  
Cc: Douglas Aburano/R5/USEPA/US@EPA, Steven Rosenthal/R5/USEPA/US@EPA  
Archive: This message is being viewed in an archive.

I have talked to Trent Wickman and Dave Pohlman, and neither of them have received copies of the letter we sent to Minnesota. Did you provide Karen with mailing addresses for them and for Don Shepherd? (Dave says make sure you use his St. Paul address and not his nominal Omaha address.) In any case, they would appreciate electronic copies of what you sent Minnesota. (You will also want an electronic copy for our docket.) Please cc me on your email to them, because I would like an electronic copy as well.



**Minnesota Regional Haze Letter**

Matthew Rau to: David\_Pohlman

06/17/2011 12:57 PM

Cc: John Summerhays

Bcc: Matthew Rau

Dave,

The letter to Minnesota regarding regional haze issues has been signed and mailed. I have attached a scanned version of the letter. The enclosure is the Control Cost manual chapter on SCR. I imagine that you already have the Control Cost manual, so I did not attached it to this message. Let me know if you need the manual electronically and I will sent it to you.

Thanks,

Matt

[attachment "MinnesotaHazeLetterJune2011.PDF" deleted by Matthew Rau/R5/USEPA/US]





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

JUN 06 2011

John Seltz, Chief  
Air Assessment Section  
Minnesota Pollution Control Agency  
520 Lafayette Road  
Saint Paul, Minnesota 55155

Dear Mr. Seltz:

The Minnesota regional haze plan was submitted in December 2009. This letter provides our preliminary review of the plan's Best Available Retrofit Technology (BART) requirements.

I previously reminded you that under section 110 of the Clean Air Act, the U.S. Environmental Protection Agency cannot approve Minnesota's plan as meeting requirements for BART without these requirements first being established in an enforceable form. You responded by requesting that we provide informal comment of your intended emission limits before the limits are incorporated into permits or similar enforceable document. This letter continues this dialogue on BART emission limits.

For your six taconite facilities, an Administrative Order for each facility was included in your submission. These Orders require each taconite facility to monitor its emissions and report the results to you. The monitoring results will be used to set specific numeric emission limits for the BART units that are needed for final approval. We encourage you to keep moving toward setting the specific numeric emission limits as soon as practical. The option remains for us to propose to grant conditional approval of these Orders, conditioned on the submission of the specific emission limits in an enforceable document.

EPA commented on United Taconite on May 11, 2010. EPA noted concerns about the BART determination for United Taconite. The concerns include the authorization to use additional types of fuel and the thoroughness of the analyses. Please submit a draft BART determination for United Taconite once it is available. We are willing to comment on the draft determination and work with you so that your determination satisfies our concerns. In fact, we will gladly work with you on any of the taconite facilities as the specific numeric emission limits are set.

The other BART determinations in Minnesota were for five power generation facilities. We are prepared to propose approval of the BART determinations for Minnesota Power's Boswell Energy Center, Minnesota Power's Taconite Harbor Energy Center, and North Shore Mining's Silver Bay Power Plant once the emission limits are submitted to us in an enforceable document.

We believe that the available evidence indicates that Xcel Energy's Sherburne County facility (Sherco) should add selective catalytic reduction (SCR) to the recommended nitrogen oxides (NOx) combustion controls. We are basing this on calculations we have performed evaluating SCR at emission levels of 0.05 pounds per million British Thermal Units (lb/MMBtu) and 0.08 lb/MMBtu. Both of which are considered cost-effective. We chose to evaluate these two emission levels because you assumed a 0.08 lb/MMBtu level in your analyses and because we believe that the lower limit of 0.05 lb/MMBtu is generally achievable by this control technology.

I have enclosed the Control Cost Manual chapter on SCR control and our calculations made using the Control Cost Manual equations for your reference. We calculated the SCR control costs using the EPA Control Cost Manual. In the Regional Haze Regulations and BART Determinations Final Rule (70 FR 39127), we stated that EPA's Control Cost Manual is the preferred reference tool for cost calculations.

Using the EPA Control Cost Manual indicates SCR costs at a 0.05 lb/MMBtu limit of approximately \$1900 per ton for Unit 1 and \$1800 per ton for Unit 2. The control costs were adjusted for inflation into 2009 dollars and are for combustion control with SCR. The catalyst cost from the Control Cost Manual of \$240 per foot cubed was used in our calculations. The costs we calculated for both Sherco units are lower than the values MPCA calculated using Cue Cost, which were in 2005 dollars. A 0.08 lb/MMBtu emission limit using the EPA Control Cost manual calculations would still yield lower costs in 2009 dollars of about \$2100 per ton for Unit 1 and \$2000 per ton for Unit 2. We will gladly answer questions regarding our calculations.

As already mentioned, we believe the EPA Control Cost Manual should be used to determine costs unless there is a compelling reason to use Cue Cost. The total cost and visibility improvement from the system of combustion control coupled with post-combustion control should be considered. The control options are combustion control or combustion control coupled with post-combustion control. The total costs, total emissions reduction, and total visibility benefit of the combustion control and SCR system provide the basis for a fair comparison to the same data for combustion controls alone. The visibility benefit analysis should include the benefits at both the most impact Class I area and the cumulative benefit across all impacted area to give a fair picture of the benefit from emission reductions. Given the close proximity of three Class I areas in and near Northern Minnesota, evaluating the cumulative visibility benefit at the three areas gives a more complete view of the benefit from the potential BART reductions at Sherco and your other BART sources.

We also have concerns regarding the BART determination for Rochester Public Utilities-Silver Lake Plant. Your determination concluded that no NOx emission limit should be applied to Unit 3. While this facility is located a considerable distance from any Class I area, it is also noted that the addition of low NOx burner and over-fire air on Unit 3 is highly cost effective at \$68 per ton. The cost of combustion controls on Unit 3 seems low enough to require such control.

The BART determination did not include the total annualized cost, the reduction in emissions, or the visibility benefit from adding combustion controls to Unit 3. Please provide us with that

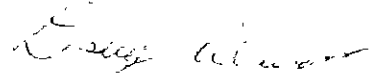
information. EPA has estimated, very roughly given the missing information, that the combustion controls reduce NOx emissions by 300 tons per year. Given your value of \$68 per ton reduced, leads EPA to estimate an annual control cost of approximately \$20,000. Using the figures in the Sherco BART determinations, combustion controls will reduce nitrogen oxides emissions by 6,600 ton per year yielding a 0.57 deciview (dv) improvement at Boundary Waters approximately 375 km away. A simple emissions to distance calculation gives a 0.019 dv improvement at Boundary Waters, approximately 500 km away from Rochester. This leads to value of just over \$1,000,000 per dv. This again suggests that installing low NOx burners coupled with over-fire air on Unit 3 is justified.

EPA has noted in previous comments on your regional haze plan that we agree with many of the concerns from the Federal Land Managers. I know the Federal Land Managers have similar concerns on the BART determinations as we stated in this letter. As such, it may be useful to include the Federal Land Managers in some of our consultations regarding these issues as that will serve to address their concerns and our concerns at the same time.

Let me conclude by noting that EPA is currently considering if the proposed Clean Air Transportation Rule (Transport Rule) will produce visibility benefits that are better than BART. Such a finding would allow states, should they so choose, to satisfy most BART requirements for sources by participating in the Transport Rule. EPA has proposed Minnesota as being a Transport Rule participant, so I will keep you informed as decisions occur on this matter. We should discuss this matter at the appropriate time. Until then, we will assume that the BART emission limits submitted with your regional haze plan will be the limits for your sources.

Please let me know if you have any questions regarding our preliminary review of the BART determinations. I am looking forward to working with you to resolve our concerns with the determinations for the two power generating facilities and the taconite facilities.

Sincerely,



Doug Aburano  
Chief, Control Strategies Section

Enclosures

cc: Trent Wickman, USFS  
Dave Pohlman, NPS  
Don Shepherd, NPS



**Minnesota Regional Haze Letter**

**Matthew Rau** to: Don\_Shepherd

Cc: John Summerhays

Bcc: Matthew Rau

06/17/2011 12:57 PM

Don,

The letter to Minnesota regarding regional haze issues has been signed and mailed. I have attached a scanned version of the letter. The enclosure is the Control Cost manual SCR chapter. I imagine that you already have the Control Cost manual, so I did not attached it to this message. Let me know if you need the manual electronically and I will sent it to you.

Thanks,  
Matt

[attachment "MinnesotaHazeLetterJune2011.PDF" deleted by Matthew Rau/R5/USEPA/US]



**Minnesota Regional Haze Letter**

Matthew Rau to: Trent R Wickman

Cc: John Summerhays

Bcc: Matthew Rau

06/17/2011 12:57 PM

Trent,

The letter to Minnesota regarding regional haze issues has been signed and mailed. I have attached a scanned version of the letter. The enclosure is the Control Cost manual chapter on SCR. I imagine that you already have the Control Cost manual, so I did not attached it to this message. Let me know if you need the manual electronically and I will sent it to you.

Thanks,  
Matt

[attachment "MinnesotaHazeLetterJune2011.PDF" deleted by Matthew Rau/R5/USEPA/US]





**Re: SHERCO certification questions**

John Summerhays to: Martha Keating  
Cc: Lea Anderson, Matthew Rau

07/26/2011 11:11 AM

Please add Matt Rau to your invitation. I just accepted your 10 CDT Friday invite, but I want to make sure that it's scheduled at a time when Matt can participate.

Martha Keating

Hi John - I am hoping you can update Lea and I...

07/26/2011 10:54:59 AM

From: Martha Keating/RTP/USEPA/US  
To: John Summerhays/R5/USEPA/US@EPA  
Cc: Lea Anderson/DC/USEPA/US@EPA  
Date: 07/26/2011 10:54 AM  
Subject: SHERCO certification questions

---

Hi John -

I am hoping you can update Lea and I on the SHERCO certification. we are working together on the transport rule > BART rule and are thinking about potential RAVI issues.

I sent you an invitation, but wanted to give you a little more background. Heads up - if you can talk on Friday, the call-in number I sent will need to be changed! Will send an update if everyone is available at that time.

Thanks  
Martha

Martha H. Keating  
Environmental Protection Specialist  
Geographic Strategies Group  
Air Quality Policy Division  
U.S. EPA, Office of Air Quality Planning and Standards  
MD C539-04  
RTP, NC 27711  
(919) 541-9407



**Sherco RAVI**

Matthew Rau to: Martha Keating, Lea Anderson  
Cc: Todd Hawes, John Summerhays, Douglas Aburano

07/29/2011 10:47 AM

Lea and Martha,

I have attached the RAVI certification letter from the NPS that you were interesting in reviewing . I have also attached the letter we sent to Minnesota regarding its BART determinations that I mention on our call .

As always, do not hesitate to contact me with questions or for any information on the Minnesota haze plan including the Sherco BART determination.

Thanks,  
Matt

[attachment "Certification of RAVI by SHERCO.pdf" deleted by Matthew Rau/R5/USEPA/US]  
[attachment "MinnesotaHazeLetterJune2011.PDF" deleted by Matthew Rau/R5/USEPA/US]





**Fw: 2580; Minnesota Regional Haze State Implementation Plan**

Trent R Wickman      Todd Hawes, Matthew Rau, John  
to: Summerhays, Martha Keating, Anna Wood,      08/11/2011 10:15 AM  
Douglas Aburano, Patricia\_F\_Brewer,

This letter went in the mail today. The attachment is below.

Trent Wickman, P.E.  
Air Resource Management  
Great Lakes National Forests - Eastern Region  
USDA Forest Service  
stationed on the - Superior National Forest  
8901 Grand Avenue Place  
Duluth, MN 55808  
ph# 218-626-4372  
cell# 218-341-8646  
fx# 218-626-4398  
twickman@fs.fed.us

----- Forwarded by Trent R Wickman/R9/USDAFS on 08/11/2011 10:01 AM -----

Mailroom R9  
Superior  
Sent by: Betsy  
Strom/R9/USDAFS

08/11/2011 09:39  
AM

To  
cc Don\_Shepherd@nps.gov, john.seltz@pca.state.mn.us, Bret A  
Anderson/WO/USDAFS@FSNOTES, Trent R  
Wickman/R9/USDAFS@FSNOTES  
Subject 2580; Minnesota Regional Haze State Implementation Plan

The following Correspondence is archived in the Records database . Any enclosures will follow the letter in this message.

To open this document in the Records database, click on this link ->Link

To access all documents in the National Records Database, click on this link ->Link



FS\_correspondence.doc MN RH letter-att.docx 8-11-11EPA let.doc



**Re: Request**

John Summerhays to: Randall Robinson, Matthew Rau  
Cc: Douglas Aburano

08/22/2011 03:30 PM

History: This message has been replied to.

If time permits, I'd like to hear from Matt as to whether the following is accurate:

Minnesota has submitted a plan for regional haze, which described various emission limits needed to address regional haze requirements. In consultation with Region 5, the State is currently preparing administrative orders that will make these limits enforceable, as needed for the plan to be fully approvable.

Randall Robinson This is what you get for knowing so much about... 08/22/2011 03:21:42 PM

From: Randall Robinson/R5/USEPA/US  
To: John Summerhays/R5/USEPA/US@EPA  
Date: 08/22/2011 03:21 PM  
Subject: Request

This is what you get for knowing so much about everything. Cheryl is asking for, ASAP, a brief description/status of upcoming rules that could affect Minnesota. Susan Hedman is going there. Would you write a few sentences describing the status of the MN Regional Haze/BART issues?

Thanks, Randy

Randy Robinson  
USEPA Region 5  
312 353-6713

--- Forwarded by Randall Robinson/R5/USEPA/US on 08/22/2011 03:19 PM ---

From: John Mooney/R5/USEPA/US  
To: Randall Robinson/R5/USEPA/US@EPA, Aburano.Douglas@EPA.GOV  
Date: 08/22/2011 01:53 PM  
Subject: Fw: Please have someone

--- Forwarded by John Mooney/R5/USEPA/US on 08/22/2011 01:52 PM ---

From: MaryPat Tyson/R5/USEPA/US  
To: Cheryl Newton/R5/USEPA/US@EPA  
Cc: "John Mooney" <Mooney.John@EPA.GOV>, "Bruce Sypniewski" <Sypniewski.Bruce@EPA.GOV>, "Mary Pat Tyson" <Tyson.Marypat@EPA.GOV>, Carlton Nash/R5/USEPA/US@EPA  
Date: 08/22/2011 12:00 PM  
Subject: Re: Please have someone

Maybe a good place to start is the OAQPS list - we could just add a couple line description? Would still need to add OAP and OTAQ rules. Looking forward to more clarification.

[attachment "OAQPS Weekly Report 8\_22\_11.docx" deleted by John Summerhays/R5/USEPA/US]

Cheryl Newton Get to work on a brief description/status of major... 08/22/2011 11:24:31 AM



**OAQPS Weekly Report  
Week of August 22, 2011**

**Administrator/AA Signature Packages**

OAQPS to OAR-AA

- Letter to Avenal for AA signature on permit outcome from EAB appeal

OAR-AA to OP

- PM NAAQS (proposal)

OP to the Office of the Administrator

- Classification of Subpart 1 Areas, Revisions to Impl Rule for 1997 8-Hr O3 NAAQS (final rule)

**OMB Packages**

OAQPS to OAR-AA

- EGU NSPS for GHGs (proposal, court-ordered by 9/26/11)
- Nitric Acid NSPS (proposal, court-ordered by 9/30/11)
- Residential Wood Heaters NSPS (proposal)

OAR-AA to OP

*None*

OP to OMB

*None*

**Early Guidance/Options Selection/FAR Meetings Scheduled Over Next 2 Weeks**

Week of 8/22/11

- Primary Lead Smelting RTR Option Selection meeting scheduled with AA on 8/24/11

Week of 8/29/11

*None*

### **Status of Upcoming Actions Requiring Signature/Other Significant Actions:**

- **Aerospace RTR NESHAP**, proposal—Litigants verbally granted three-month extension to court-ordered proposal deadline (Admin signature court-ordered by 11/30/11);
- **Aluminum Reductions Plants (primary) RTR NESHAP**, proposal—Option Selection meeting anticipate for end of August (Admin signature court-ordered by 10/31/11);
- **Aluminum (Secondary) RTR NESHAP**, proposal—SBREFA process nearly complete; anticipate no small business impacts; litigants verbally granted three-month extension on court-ordered proposal deadline (Admin signature court-ordered by 1/30/12);
- **Avenal Letter**—Letter informing Avenal of outcome of EAB appeal for AA signature week of 8/22/11; *Federal Register* notice informing the public of the Avenal permit outcome anticipated for AA signature week of 8/29/11;
- **Black Carbon Report to Congress**—Anticipate completing revisions in response to peer review by 8/31/11; OAR review scheduled for first two weeks in September; anticipate completing interagency review late October; anticipate releasing final report end of November 2011;
- **Chemical Manufacturing Area Source Reconsideration**, proposal—Proposed rule transmitted to OMB on 7/25/11; discussions with OMB continue (Admin signature anticipated by 10/2011);
- **Community-Scale Air Toxics Ambient Monitoring**, grant award—An EPA Regional Office and OAR panel completed evaluation of Community-Scale Air Toxics Ambient Monitoring grant proposals; OAQPS beginning briefings on panel's findings; awards starting in fall 2011;
- **EGU NSPS for GHGs**, proposal—FAR meeting held on 8/10/11 (Admin signature court-ordered by 9/26/11);
- **EJ conference: One Community One Environment**—Conference will be held in Detroit, MI, during week of August 22; senior EPA attendees include Cynthia Giles, Mathy Stanislaus, Janet McCabe, Mike Shapiro, Lisa Garcia, Michelle DePass and Greg Green; attendees from HHS, DOJ, HUD and DOE will participate in interagency working group;
- **Ferroalloys RTR NESHAP**, proposal—Options Selection meeting anticipated at end of August (Admin signature court-ordered by 10/31/11);
- **Lead NAAQS (2014)**—Early Guidance meeting scheduled for 9/5/11;
- **Lead (Primary) Smelting RTR NESHAP**, final—Options Selection meeting anticipate at end of August (Admin signature court-ordered by 10/31/11);
- **Mercury and Air Toxics Standards (MATS)**, final rule—Public comment period closed on 8/4/11 (Admin signature court-ordered by 11/16/11);
- **Mineral Wool Production/Fiberglass Wool RTR NESHAP**, proposal—Option Selection meeting chaired by AA scheduled for 8/19/11 (Admin signature court-ordered by 10/31/11);
- **Nitric Acid NSPS**, proposal—Anticipate transmitting proposed rule OMB package to OAR-IO during week of 8/22/11 (Admin signature court-ordered by 9/30/11);
- **NOx/SOx Secondary NAAQS**, final rule—Proposed rule signed on 7/12/11; public hearing will be held in Arlington, Virginia, on 8/25/11 (60-day comment period) (Admin signature court-ordered by 3/20/12);

- **NSPS Strategy, ANPRM**—ANPRM transmitted to OMB on 8/11/11; 10-day OMB review required under EO 12866 (Admin signature anticipated by 9/30/11);
- **Ozone NAAQS (2010)**
  - **NAAQS Reconsideration**, final rule—Final rule transmitted to OMB on 7/11/11; meetings with OMB to discuss interagency comments ongoing; meetings with OMB to discuss interagency comments ongoing;
  - **Implementation Rule**, proposal—Proposed rule transmitted to OMB on 7/11/11; meetings with OMB to discuss interagency comments ongoing;
  - **Monitoring Rule**, final rule—Final rule transmitted to OMB on 7/11/11; meetings with OMB to discuss interagency comments ongoing;
- **Ozone NAAQS Revision to Implementation Rule (Subpart 1) for 1997 8-Hour Standard**, (Subpart 1 area and contingency measures), final rule—Final rule signature package transmitted to OP on 7/28/11 (Admin signature anticipated during week of 8/22/11);
- **Petroleum Refinery Heat Exchanger MACT/Uniform Standards for Heat Exchangers**, proposal—Proposed rule transmitted to OMB on 7/18/11; anticipate 90-day OMB review; discussions with OMB continue (Admin signature anticipated by 11/29/11);
- **Petroleum Refinery RTR NESHAP and NSPS for GHGs**, proposal—Convened SBREFA panel on Petroleum Refinery Section RTR and NSPS and Tier 3 on 8/4/11; meeting scheduled with SERS on 8/18/11; OAQPS/OP/OGC developing response to 8/4/11 letter from SBA questioning Agency decision to convene panel prior to developing regulatory requirements/impacts (Admin signature court-ordered by 12/10/11);
- **PM2.5 Findings of Failure to Submit SIPs for 2006 NAAQS**, final notice—Settlement agreement with litigants requires AA signature by 8/31/11;
- **PM NAAQS**, proposal—Proposed rule OMB package transmitted to OAR-IO on 7/25/11 (Admin signature anticipated in summer 2011);
- **RACM/RACT Policy for PM2.5 and 1997 O3 NAAQS**, proposal—Proposed rule transmitted to OMB on 8/9/11 (Admin signature anticipated by 12/19/11);
- **Reasonable Further Progress, 1997 8-Hour O3 NAAQS**, final rule—Final rule transmitted to OMB on 8/8/11 (Admin signature anticipate by 8/31/11, commitment to litigant);
- **Schools Air Toxics Monitoring Initiative**—Assessments for 50 schools now posted; 12 remaining reports for initial monitoring at 15 schools to be completed in fall 2011; working with Regions and follow-up monitoring underway; developing revised web pages to post follow-up monitoring;
- **Shipbuilding/repair and Wood Furniture RTR NESHAP**, final rule—FAR meeting scheduled for 8/31/11 (Admin signature court-ordered by 10/31/11);
- **SO2 NAAQS Implementation Guidance**—Availability of draft guidance document will be announced in September via NODA in *Federal Register* and posted online for public comment (60-day review/comment);

- **VOC Definition Revisions**, proposals:
  - **Exclusion of 4 Chemicals (HFE/HPPE)**—OP is currently reviewing package; waiting on OMB review determination (Admin signature anticipated by 9/6/11);
  - **Exclusion of HFOs (Honeywell petition)**—Proposed rule transmitted to OMB on 5/13/11; changes made to package in response to OMB meeting on 8/2/11; OP informally reviewing package; OMB review period will be extended (Admin signature anticipated by 11/8/11);
- **Wood (Residential) Heaters NSPS**, proposal—Anticipate transmitting proposed rule OMB package to OAR-IO during the week of 8/22/11 (Admin signature anticipated by 12/30/11);

#### **Meetings with Office of AA**

- |      |  |
|------|--|
| 8/22 | • Carmeuse Title V (J, R5)   |
| 8/23 | <ul style="list-style-type: none"> <li>• Resolution of Shell OCS Issues (J, R1,2,3,4,9,10)</li> <li>• EPA/Sate Priorities Workgroup (J&amp;JJ, R1)</li> <li>• Status Brief for MATS (G&amp;J)</li> </ul> |
| 8/24 | <ul style="list-style-type: none"> <li>• Options Selection for Primary Lead Smelting RTR (G&amp;J, R7)</li> <li>• Follow-up Meeting with CEMEX (G)</li> </ul>  |
| 8/25 | • PSD Permit Extension - Sunflower Permit in KS and Consumers Energy Corp in MI (J, R4,5,7)  |
| 8/26 | • SIP Reform Efforts (J, R4,7)   |

**Re: Request** 

Matthew Rau to: John Summerhays  
Cc: Randall Robinson, Douglas Aburano

08/22/2011 04:04 PM

John,

I agree with your brief synopsis regarding the status of the Minnesota haze plan.

Some the BART emission limits may in permits instead of orders, but the idea is a brief summary and those are for power plants. Also, Minnesota may well use CSAPR is better than BART and that would take the place of permits or orders for the power plants. Again, I say stick with what you wrote. I just wanted to mention this fine point.

-- Matt

John Summerhays If time permits, I'd like to hear from Matt as to w... 08/22/2011 03:30:32 PM

From: John Summerhays/R5/USEPA/US  
To: Randall Robinson/R5/USEPA/US@EPA, Matthew Rau/R5/USEPA/US@EPA  
Cc: Douglas Aburano/R5/USEPA/US@EPA  
Date: 08/22/2011 03:30 PM  
Subject: Re: Request

---

If time permits, I'd like to hear from Matt as to whether the following is accurate:

Minnesota has submitted a plan for regional haze, which described various emission limits needed to address regional haze requirements. In consultation with Region 5, the State is currently preparing administrative orders that will make these limits enforceable, as needed for the plan to be fully approvable.

Randall Robinson This is what you get for knowing so much about... 08/22/2011 03:21:42 PM

Cheryl Newton Get to work on a brief description/status of major... 08/22/2011 11:24:31 AM





**Sherco/RAVI**

**John Summerhays** to: Martha Keating

Cc: Matthew Rau

11/16/2011 04:53 PM


Matt prepared the fact sheet you requested. I have also drafted a note for Cheryl to send to Anna asking you folks to resolve the RAVI BART issue. Here is Matt's fact sheet, so you can be prepared when our note arrives.



ShercoRAVI Issue Paper.docx





{In Archive} Re: Sherco/RAVI   
 John Summerhays to: Martha Keating  
 Cc: Matthew Rau

11/17/2011 05:10 PM

From: John Summerhays/R5/USEPA/US  
 To: Martha Keating/RTP/USEPA/US@EPA,  
 Cc: Matthew Rau/R5/USEPA/US@EPA  
 Archive: This message is being viewed in an archive.

Attached is a table Matt supplemented that shows the comparison of the state BART determination and our determination. Obviously, this is not an "EPA Action," but you get the picture. In brief, we view BART for NOx to reflect SCR, whereas Minnesota considers BART to reflect combustion controls and low NOx burners. However, I think you understand that we are not seeking OAQPS' opinion on these determinations--we have consulted with OAQPS previously on this issue, we have applied the guidance that OAQPS has offered, and we do not wish to revisit that issue. The point is merely that our judgment as to what constitutes BART differs from the State's judgment, and so the pertinent issue here has real world consequences. Again, the pertinent issue here is whether RAVI BART must be determined for Sherco in isolation, versus whether it may be determined in conjunction with reductions occurring at all the other EGUs that would be found to be RAVI sources if anyone petitioned the NPS to do so.

I understand the legal option to defer rulemaking on BART in a RAVI context. However, it's kind of a "gotcha" if we tell Minnesota that they need do nothing for Sherco to address BART but then come back later and tell them that more control is necessary. This issue has been evident for around two years now, we accommodated your request for a delay in addressing the issue following preparation of the "better than BART" rulemaking, but we need an answer now. In particular, we owe the State an answer before they complete their permit work to establish final BART limits, which they aim to complete in time for our consent decree proposal deadline.

I believe this answers your questions, but let us know if you need any more information.



RH\_EPA\_Actions\_NOxWithMN.docx

Martha Keating

Hi - I am just getting to read this now - do you th

11/17/2011 03:05:15 PM

From: Martha Keating/RTP/USEPA/US  
 To: John Summerhays/R5/USEPA/US@EPA  
 Cc: Matthew Rau/R5/USEPA/US@EPA  
 Date: 11/17/2011 03:05 PM  
 Subject: Re: Sherco/RAVI

Hi -

I am just getting to read this now - do you think you could add something about emissions and the BART determination? Cheryl's note to Anna Wood says that you disagree with the state's determination so it would be helpful to be able to lay out what the state selected and rejected for BART and what R5 would select.

Please see the attached for the type of info the managers are asking for to make meaningful comparisons. If you want to just add a line to the table that would be great.

Also, Lea indicated to someone in R5 that the RAVI BART determination could be separate from the RH determination so you are not necessarily bound to the January 17th date for this determination (although I

know you would rather do it all at once.)

Thanks  
mk

[attachment "RH\_EPA\_Actions\_NOx.docx" deleted by John Summerhays/R5/USEPA/US]

Martha H. Keating  
Environmental Protection Specialist  
Geographic Strategies Group  
Air Quality Policy Division  
U.S. EPA, Office of Air Quality Planning and Standards  
MD C539-04  
RTP, NC 27711  
(919) 541-9407

John Summerhays

Matt prepared the fact sheet you requested. I h

11/16/2011 05:53:12 PM

## Summary of EPA Actions on State Regional Haze Plans for NOx Best Available Retrofit Technology (BART)

State	EPA Action	Unit	NOx Controls State Selected			NOx Controls State Rejected			EPA Decision on State BART Selection	Comments
			Type	C/E (\$/ton)	Visibility Improvement * (deciview)	Type	C/E (\$/ton)	Visibility Improvement * (deciview)		
Idaho	SIP - Final	TASCO, Nampa	LNB/OFA	\$1,270	# days with > 0.5 dv impairment = 56	SCR	\$3,768	# days with > 0.5 dv impairment = 40	Approved State submittal	
Idaho	SIP - Final	Monsanto/P4	None (Technically infeasible)	n/a	none	All NOx controls rejected	n/a	none	Approved State submittal	
New Mexico	FIP - Final	San Juan GS	SNCR <sup>1</sup>	\$3,494 <sup>1</sup>	2.4 <sup>1</sup>	SCR	\$7,244	9.25	State failed to timely submit complete BART determinations.	Finalized FIP based on EPA's estimate of SCR cost (\$2,500/ton) and cumulative visibility improvement of 21.69 dv.
North Dakota	SIP - Proposed	Stanton	SNCR + LNB/OFA	\$3,778	1.11	SCR	\$8,163	1.405	Approved State submittal	
North Dakota	SIP - Proposed	Leland Olds Unit 1	SNCR + SOFA	\$2,487	0.16	SNCR + boosted SOFA	\$2,854	n/a	Approved State submittal	

<sup>1</sup> This information is based on comments submitted to EPA by the State of New Mexico on EPA's proposed FIP.

State	EPA Action	Unit	NOx Controls State Selected			NOx Controls State Rejected			EPA Decision on State BART Selection	Comments
			Type	C/E (\$/ton)	Visibility Improvement * (deciview)	Type	C/E (\$/ton)	Visibility Improvement * (deciview)		
North Dakota	FIP - Proposed	Leland Olds Unit 2	SNCR + SOFA	\$1,659	3.874	SCR	\$4,050 - 5,838	4.393	Disapproved State submittal	EPA disagrees with ND's technical feasibility and cost analysis for this unit and proposed a FIP for SCR+ SOFA, at \$1,892/ton and a visibility improvement of 4.393 dv.
North Dakota	FIP - Proposed	Minnkota - Milton R Young Unit 1	SNCR + ASOFA	\$1,424	2.923	SCR	\$4,835 - \$6,901	3.476	Disapproved State submittal	EPA disagrees with ND's technical feasibility and cost analyses for this unit and proposed a FIP for SCR+ ASOFA, at \$2,569/ton and a visibility improvement of 3.476 dv.
North Dakota	FIP - Proposed	Minnkota - Milton R Young Unit 2	SNCR + ASOFA	\$1,268	3.379	SCR	\$4,765 - \$7,081	3.945	Disapproved State submittal	EPA disagrees with ND's technical feasibility and cost analyses for this unit and proposed a FIP for SCR+ ASOFA, at \$2,740/ton and a visibility improvement of 3.945 dv.

State	EPA Action	Unit	NOx Controls State Selected			NOx Controls State Rejected			EPA Decision on State BART Selection	Comments
			Type	C/E (\$/ton)	Visibility Improvement * (deciview)	Type	C/E (\$/ton)	Visibility Improvement * (deciview)		
North Dakota	FIP - Proposed	Coal Creek Station Units 1 + 2	LNB/SOFA	\$411	1.419	SNCR	\$8,551	1.507	Disapproved State submittal	EPA disagrees with ND's technical feasibility and cost analyses for this unit and proposed a FIP for SNCR+ LNB/OFA, at \$2,500/ton and a visibility improvement of 1.507 dv.
Oklahoma	SIP - Proposed	OG&E Sooner (Units 1 + 2)	LNB/OFA	\$493-\$785	1.8	SCR + LNB/OFA	\$5260 - \$7,200	2.1	Approved State submittal	
Oklahoma	SIP - Proposed	Muskogee	LNB/OFA	\$679-\$809	2.096	SCR + LNB/OFA	\$6,871-\$7,676	2.544	Approved State submittal	
Oklahoma	SIP - Proposed	AEP/PSO Northeast	LNB/OFA	\$313	1.75	SCR + LNB/OFA	\$4,044	2.22	Approved State submittal	
Oregon	SIP - Final (BART only)	Boardman	LNB/MOFA	\$1,263	1.45	SNCR	\$1,816	1.63	Approved State submittal	Approved 2014 interim limits based on state-selected controls with facility shutdown in 2020. Cumulative dv improvement over all affected Class I areas is 31.46 dv (~8.75 NOx alone).

State	EPA Action	Unit	NOx Controls State Selected			NOx Controls State Rejected			EPA Decision on State BART Selection	Comments
			Type	C/E (\$/ton)	Visibility Improvement * (deciview)	Type	C/E (\$/ton)	Visibility Improvement * (deciview)		
Minnesota	reviewing state submission	Xcel Energy-Sherburne County (Sherco) Unit 1	LNB/SOFA/CC (0.15 lb/MMBTU; 41% control)	\$996		LNB/SOFA/CC and SCR (0.05 lb/MMBTU; 80% control)	\$1,932		Sent letter to state stating that SCR appears warranted	Both Sherco units also subject to RAVI BART;  CC= combustion optimization system (combustion controls);
Minnesota	reviewing state submission	Sherco Unit 2	CC (0.15 lb/MMBTU; 38% control)	\$287	0.43 dv max./ 1.05 dv total	CC and SCR (0.05 lb/MMBTU; 79% control)	\$1,826	0.79 dv max/ 1.92 dv total	Sent letter to state stating that SCR appears warranted	Unit 2 already has LNB;  Visibility improvement is for both units together; Sherco affect 3 Class I areas;

- Deciview improvement is shown only for the most impacted Class I area, with the exception of the New Mexico San Juan facility. Cumulative deciview improvement over all affected Class I areas would be greater.

## Glossary of NOx Control Technology Terms

Low NOx burners (**LNB**) are designed to control fuel and air mixing at each burner to improve burner efficiency. Low NOx burners are often combined with other primary measures such as overfire air and SNCR systems.

- LNB/OFA means Low-NOx burner with overfire air.
- LNB/MOFA means Low-NOx burner with modified overfire air.
- LNB /SOFA means a low-NOx burner with separated overfire air.

In selective non-catalytic reduction systems (**SNCR**) a reagent (either urea or ammonia) is injected into the flue gas in the furnace. Emissions of NOx are typically reduced by 30% to 50% depending on boiler type.

- SNCR means selective non-catalytic reduction.
- SNCR + ASOFA means selective non-catalytic reduction with advanced separated overfire air.
- SNCR + SOFA means selective non-catalytic reduction with separated overfire air.
- SNCR + LNB/OFA means selective non-catalytic reduction in combination with a low-NOx burner with overfire air.

**SCR** means selective catalytic reduction. In SCR systems, ammonia is used as the reducing agent and is injected into the flue gas stream, passing over a catalyst. NOx emission reductions over 80-90% are typically achieved.





**Fw: NPCA letter re Sherco - Part 1**

John Summerhays to: Matthew Rau, Martha Keating, Rhea Jones

11/23/2011 01:12 PM

Cc: Douglas Aburano, Pamela Blakley

Good timing! The National Parks Conservation Association (or whatever NPCA stands for) would like our decision on RAVI BART to show up in the FR on January 15. Let there be no doubt as to what they would like us to conclude. I will also send you the attachments, which came in by separate email.

----- Forwarded by John Summerhays/R5/USEPA/US on 11/23/2011 01:08 PM -----

From: Cheryl Newton/R5/USEPA/US  
To: "Douglas Aburano" <Aburano.Douglas@epamail.epa.gov>, "John Summerhays" <Summerhays.John@epamail.epa.gov>  
Cc: "John Mooney" <Mooney.John@epa.gov>, "Bruce Sypniewski" <Sypniewski.Bruce@epa.gov>  
Date: 11/23/2011 12:31 PM  
Subject: Fw: NPCA letter re Sherco - Part 1

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Anything I should reply to Susan in terms of explaining? Part 2 coming. Thanks

---

**From:** Susan Hedman  
**Sent:** 11/23/2011 11:34 AM CST  
**To:** Newton.Cheryl@epa.gov  
**Cc:** Mathur.Bharat@epa.gov  
**Subject:** Fw: NPCA letter re Sherco - Part 1

Susan Hedman  
Regional Administrator - Region 5  
Great Lakes National Program Manager  
U.S. Environmental Protection Agency  
77 West Jackson, 19th Floor  
Chicago, IL 60604

----- Forwarded by Susan Hedman/R5/USEPA/US on 11/23/2011 11:34 AM -----

From: Reed Zars <reedzars@gmail.com>  
To: Susan Hedman/R5/USEPA/US@EPA  
Cc: Stephanie Kodish <skodish@npca.org>  
Date: 11/23/2011 09:26 AM  
Subject: NPCA letter re Sherco

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Dear Ms. Hedman,

Please find attached our letter regarding EPA's upcoming BART determination for the Sherco facility. I will send the attachments separately.

Sincerely,

Reed Zars

[attachment "2011 11-23 NPCA to EPA re Sherco final.pdf" deleted by Matthew Rau/R5/USEPA/US]

**Reed Zars**  
Attorney at Law  
910 Kearney Street  
Laramie, WY 82070  
307-745-7979

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November 23, 2011

**VIA EMAIL AND U.S. MAIL**

Susan Hedman, Regional Administrator  
U.S. Environmental Protection Agency-Region 5  
Ralph Metcalfe Federal Building  
77 West Jackson Blvd.  
Chicago, Illinois 60604-3590  
hedman.susan@epa.gov

**RE: Best Available Retrofit Technology ("BART") Determination for Xcel  
Energy's Sherburne County Generating Station ("Sherco")**

Dear Administrator Hedman:

Approximately two months from now you will be proposing a regional haze implementation plan for Minnesota. We are writing to you today regarding one critical element of that plan: the determination of Best Available Retrofit Technology ("BART") for Xcel's Sherco power plant in Sherburne County ("Sherco"). Because emissions from Sherco have been certified by the National Park Service ("NPS") as causing reasonably attributable visibility impairment ("RAVI") in both Voyageurs and Isle Royale National Parks, EPA's upcoming BART determination must satisfy RAVI requirements.

As shown below, this means at Sherco that RAVI BART for NO<sub>x</sub> is nothing less than a unit-specific emission limit of 0.05 lb/mmbtu. It also means that this 0.05 lb/mmbtu RAVI limit cannot be supplanted by the CSAPR rule's state-wide NO<sub>x</sub> caps and multi-state trading program because there is no "better than BART" alternative for RAVI BART under 40 C.F.R. §51.302 as there is for regional haze BART under 40 C.F.R. §51.308(e)(2). Even if a trading program or other alternative measures could lawfully be undertaken in lieu of RAVI BART, which they cannot, the CSAPR allocations for Sherco Units 1 and 2 would plainly not result in emission reductions equal to those that should be deemed as RAVI BART and would not guarantee the same or better visibility improvement from this facility in Voyageurs and Isle Royale National Parks.

## I. Sherco's RAVI Certification.

On October 21, 2009, the Department of Interior certified, pursuant to 40 C.F.R. §51.302(c)(1), that emissions from Sherco were causing reasonably attributable visibility impairment in Voyageurs and Isle Royale National Parks. **Attachment 1.** This certification triggered the obligation to establish RAVI BART for Sherco. 40 C.F.R. §51.302(c)(4)(i). Because EPA administers the RAVI elements of the Clean Air Act's visibility program in Minnesota, EPA has the non-discretionary duty to establish RAVI BART for Sherco.

Accordingly, after a Federal Land Manager certifies RAVI for a particular source, EPA "must identify and analyze for BART" that source "which may reasonably be anticipated to cause or contribute to impairment of visibility in any mandatory Class I Federal area." 40 C.F.R. §51.302(c)(4). EPA's plan "must require that each existing stationary facility required to install and operate BART do so as expeditiously as practicable but in no case later than five years after plan approval." 40 C.F.R. §51.302(c)(4)(iv). Therefore, the EPA needs to issue a RAVI-BART determination for Sherco and make sure it is promptly enforced.<sup>1</sup>

## II. RAVI BART for Sherco NO<sub>x</sub> Emissions.

Sherco is a three-unit, 2,255 megawatt coal-fired power plant located in Becker, Minnesota, approximately 45 miles northwest of Minneapolis. Sherco is the largest single source of air pollution in Minnesota, each year emitting approximately 16,000 tons of nitrogen oxides (NO<sub>x</sub>), and 25,000 tons of sulfur dioxide (SO<sub>2</sub>). <http://camddataandmaps.epa.gov/gdm/index.cfm>.

The cumulative impact of current NO<sub>x</sub> and SO<sub>2</sub> emissions from Sherco Units 1 and 2 (the two "BART-eligible" units) on visibility in Voyageurs and Isle Royale National Parks, and Boundary Waters Canoe Area Wilderness, is 5.37 deciviews on at least eight days every year. Xcel BART Analysis, October 25, 2006, pp. 74-75. **Attachment 2.** Sherco Units 1 and 2 impair visibility greater than 0.5 deciviews an average of 227 days every year in the Boundary Waters Canoe Area Wilderness, 147 days in Voyageurs National Park, and 131 days in Isle Royale National Park. *Id.*

Both EPA and the NPS agree that regional haze BART for NO<sub>x</sub> at Sherco Units 1 and 2 is represented by an emission limit of 0.05 lb/mmBtu on a 30-day rolling average basis. For example, on September 3, 2009, NPS provided the results of its own BART analysis for Sherco, concluding:

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<sup>1</sup> EPA has failed since 1987 to develop any long term strategy for the RAVI program in Minnesota, and thus the agency has an immediate, non-discretionary duty to develop a long-term strategy and revised federal implementation plan ("FIP") that requires a Sherco RAVI BART NO<sub>x</sub> value of 0.05 lb/mmBtu.

Xcel and MPCA have underestimated the ability of SCR [selective catalytic combustion] to reduce NO<sub>x</sub> emissions and overestimated its costs. We believe that a proper five-factor analysis would conclude that SCR at 0.05 lb/mmBtu is BART for Sherco #1 and #2.

#### **Attachment 3.**

On June 6, 2011, EPA similarly concluded that a NO<sub>x</sub> emission limit of 0.05 lb/mmBtu was BART at Sherco, stating:

We believe that the available evidence indicates that Xcel Energy's Sherburne County facility (Sherco) should add selective catalytic reduction (SCR) to the recommended nitrogen oxides (NO<sub>x</sub>) combustion controls. We are basing this on calculations we have performed evaluating SCR at emission levels of 0.05 pounds per million British Thermal Units (lb/MMBtu) and 0.08 lb/MMBtu. Both of which are considered cost-effective. We chose to evaluate these two emission levels because you assumed a 0.08 lb/MMBtu level in your analyses and because we believe that the lower limit of 0.05 lb/MMBtu is generally achievable by this control technology.

#### **Attachment 4.**

##### **III. The CSAPR Rule Does Not Apply to RAVI BART.**

As shown above, the well-established 0.05 lb/mmBtu RAVI BART NO<sub>x</sub> limit for Sherco cannot be supplanted by the CSAPR rule's state-wide NO<sub>x</sub> caps and multi-state trading program because there is no "better than BART" alternative for RAVI BART under 40 C.F.R. §51.302 as there is for regional haze BART under 40 C.F.R. §51.308(e)(2).

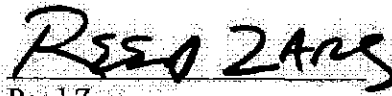
Even if a trading program or other alternative measures could lawfully be undertaken in lieu of RAVI BART, which they cannot, the CSAPR allocations for Sherco Units 1 and 2 would plainly not result in emission reductions equal to those that should be deemed as RAVI BART and do not guarantee the same or better visibility improvement from this facility in Voyageurs and Isle Royale National Parks.

By way of example, the BART NO<sub>x</sub> limit of 0.05 lb/mmBtu at Sherco Units 1 and 2 should yield a cumulative emission rate of approximately 2,450 tons of NO<sub>x</sub> per year. Under the CSAPR allocations, however, the same two units together would be allowed to emit 7,800 tons of NO<sub>x</sub> per year. See, <http://www.epa.gov/airtransport/pdfs/UnitLevelAlloc.pdf>. Plainly CSAPR does not yield anywhere near the emissions reductions required at this facility under RAVI BART.

IV. Conclusion.

We appreciate your consideration of the issues we raise above, and would welcome the opportunity to discuss them at greater length should you have any questions.

Sincerely yours,

  
Reed Zars

**ATTACHMENTS**

1. October 21, 2009, Department of Interior RAVI Certification regarding Sherco.
2. October 25, 2006, Xcel Energy's Best Available Retrofit Technology (BART) Analysis for Sherburne County Generating Plant, excerpts.
3. September 3, 2009, National Park Service comments on BART for Sherco.
4. June 6, 2011, EPA letter to Minnesota Pollution Control Agency regarding BART for Sherco.



**Fw: Sherco Part 2**

John Summerhays to: Matthew Rau, Martha Keating, Rhea Jones  
Cc: Pamela Blakley, Douglas Aburano

11/23/2011 01:13 PM

The attachments to the NPCA letter to the R5 RA.

----- Forwarded by John Summerhays/R5/USEPA/US on 11/23/2011 01:07 PM -----

From: Cheryl Newton/R5/USEPA/US  
To: "Douglas Aburano" <Aburano.Douglas@epamail.epa.gov>, "John Summerhays" <Summerhays.John@epamail.epa.gov>  
Cc: "John Mooney" <Mooney.John@epa.gov>, "Bruce Sypniewski" <Sypniewski.Bruce@epa.gov>  
Date: 11/23/2011 12:32 PM  
Subject: Fw: Sherco Part 2

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**From:** Susan Hedman  
**Sent:** 11/23/2011 11:35 AM CST  
**To:** Newton.Cheryl@epa.gov  
**Cc:** Mathur.Bharat@epa.gov  
**Subject:** Fw: Sherco Part 2

Susan Hedman  
Regional Administrator - Region 5  
Great Lakes National Program Manager  
U.S. Environmental Protection Agency  
77 West Jackson, 19th Floor  
Chicago, IL 60604

----- Forwarded by Susan Hedman/R5/USEPA/US on 11/23/2011 11:35 AM -----

From: Reed Zars <reedzars@gmail.com>  
To: Susan Hedman/R5/USEPA/US@EPA  
Cc: Stephanie Kodish <skodish@npca.org>  
Date: 11/23/2011 09:29 AM  
Subject: Attachments

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[attachment "Attachment 1 2009 10-21 NPS letter.pdf" deleted by Matthew Rau/R5/USEPA/US]  
[attachment "Attachment 2 Xcel 2006 Sherco BART Application.pdf" deleted by Matthew Rau/R5/USEPA/US] [attachment "Attachment 3 2009 9-3 revised NPS comments on Sherco BART.pdf" deleted by Matthew Rau/R5/USEPA/US] [attachment "Attachment 4 2011 6-6 EPA to MPCA.pdf" deleted by Matthew Rau/R5/USEPA/US]





# United States Department of the Interior

OFFICE OF THE SECRETARY  
Washington, DC 20240

OCT 21 2009

Mr. Bharat Mathur  
Acting Regional Administrator  
U.S. Environmental Protection Agency, Region 5  
77 West Jackson Boulevard  
Chicago, Illinois 60604-3507

Dear Mr. Mathur:

On September 3, 2009, the National Parks Conservation Association (NPCA), Minnesota Center for Environmental Advocacy, Friends of the Boundary Waters Wilderness, and Voyageurs National Park Association petitioned the Department of the Interior (DOI) to certify to the Minnesota Pollution Control Agency (MPCA) that a portion of the visibility impairment in Voyageurs and Isle Royale National Parks is reasonably attributable to pollution emissions from Xcel Energy's Sherburne County Generating Plant (Sherco) in central Minnesota. I have enclosed a copy of this petition for your review. Under 40 C.F.R. § 51.302(c)(1), "[t]he affected Federal Land Manager may certify to the State, at any time, that there exists reasonably attributable impairment of visibility in any mandatory Class I Federal area." In this case, because the Environmental Protection Agency (EPA) currently administers the 1980 Visibility Protection Rules for the State of Minnesota through a Federal Implementation Plan, any such visibility impairment certification should be directed to the EPA, not the MPCA. For the reasons discussed below, I am granting the NPCA's request, and hereby certify that there exists reasonably attributable impairment of visibility at Voyageurs and Isle Royale due to emissions from the Sherco facility.

## **Background**

On November 30, 1979, the DOI identified Voyageurs and Isle Royale as Class I areas where visibility is an important value. On November 14, 1985, the DOI certified to the EPA that visibility impairment existed in Voyageurs and Isle Royale, and all other Class I areas in its jurisdiction in the lower 48 States.

Sherco consists of three coal-fired units with a total plant electrical output rating of 2,255 megawatts. The plant is located in Becker, Minnesota, and based on Xcel Energy's analyses, its emissions impact visibility at Voyageurs and Isle Royale, both mandatory Class I Federal areas administered by the National Park Service (NPS). According to EPA's Clean Air Markets Database, in 2008, out of 1,228 power plants in the United States, Sherco ranked number 101 in sulfur dioxide emissions at 23,419 tons and number 33 for nitrogen oxides (NO<sub>x</sub>) emissions at 17,713 tons. Only Sherco Units 1 and 2 are subject to the Best Available Retrofit Technology (BART) provisions of the Regional Haze Rule. Xcel Energy initially proposed to install Selective Catalytic Reduction (SCR) at Sherco Units 1 and 2 to control NO<sub>x</sub> emissions from those units. However, for reasons unclear to us, Xcel Energy later withdrew its SCR proposal in favor of the existing combustion controls for Sherco Units 1 and 2. On June 26, 2009, and then

again on September 3, 2009, the NPS submitted extensive comments in support of its position that SCR is indeed BART for Sherco Units 1 and 2 (copy enclosed). Despite our comments, and the fact that the MPCA determined that SCR was BART for the smaller Minnesota Power Boswell Unit 3 and Xcel Energy King Units 1 and 2, the MPCA agreed with Xcel Energy that the existing combustion controls were BART for Sherco Units 1 and 2.

#### **Sherco's Air Quality Impacts at Voyageurs and Isle Royale**

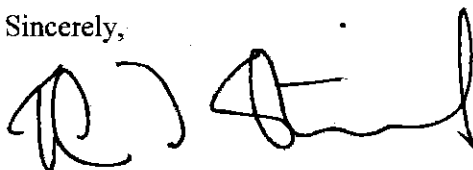
According to the EPA's BART guidelines, a single source that is responsible for a 0.5 deciview (dv) or more change in visibility should be considered to "contribute to" visibility impairment. Xcel Energy's regional haze modeling submitted to the MPCA in October 2006, showed that, for the 2002-2004 modeling period, combined impacts from Sherco Units 1 and 2 were above the EPA 0.5 dv threshold on 165 days at Voyageurs and 159 days at Isle Royale, with maximum impacts of 2.34 dv and 1.79 dv respectively.

#### **Conclusion**

Based on Xcel Energy's modeling results, a portion of the existing visibility impairment in Voyageurs and Isle Royale is reasonably attributable to pollution emissions from Sherco Units 1 and 2. As noted in our previous comments on MPCA's proposed regional haze rules, we believe that SCR at 0.06 pounds per million British thermal units heat input (30-day rolling average) is BART for the Sherco facility. Applying SCR would reduce NO<sub>x</sub> emissions from the facility by 80 percent, or more than 10,000 tons per year.

We would be happy to discuss our concerns directly with you and the MPCA. Please direct any questions you have regarding this matter to Chris Holbeck, Natural Resource Program Manager, Midwest Region, NPS, at 402/661-1864. By working together, I am confident that we can reach a solution that will preserve the visibility at Voyageurs and Isle Royale for the enjoyment of future generations.

Sincerely,



Thomas L. Strickland  
Assistant Secretary for Fish and Wildlife and Parks

Enclosure

cc:

Secretary Tom Vilsack, Department of Agriculture, 1400 Independence Avenue, S.W.,  
Washington, District of Columbia 20250

Mr. Paul Eger, Commissioner, Minnesota Pollution Control Agency, 520 Lafayette Road North,  
St. Paul, Minnesota 55155-4194

Mr. Ernest Quintana, Regional Director, Midwest Region, National Park Service, 601 Riverfront  
Drive, Omaha, Nebraska 68102

**Best Available Retrofit Technology Analysis  
For  
Sherburne County Generating Plant  
Units 1 and 2**

Prepared by  
Northern States Power Co.  
d/b/a Xcel Energy

October 25, 2006

## 1.0 Executive Summary

The Regional Haze Rule calls for state and federal agencies to work together to improve visibility in 156 national parks and wilderness areas. Each state must modify its State Implementation Plan (SIP) to incorporate measures necessary to make reasonable progress toward the national visibility goal, including requirements that certain existing stationary sources install, operate, and maintain Best Available Retrofit Technology (BART). For Units 1 and 2 at Xcel Energy's Sherburne County Generating Plant (Sherco), the Minnesota Pollution Control Agency (MPCA) determined that Xcel Energy must evaluate what constitutes BART for nitrogen oxides ( $\text{NO}_x$ ), sulfur dioxide ( $\text{SO}_2$ ), and particulate matter less than 10 microns ( $\text{PM}_{10}$ ). The regulations also provide that a state participating in the Clean Air Interstate Rule (CAIR), which includes Minnesota, need not require BART-eligible electric generating units to install BART, because EPA's analysis concluded that CAIR controls are "better than BART" for electric generating units in states subject to CAIR. The MPCA has stated that it will determine whether CAIR substitutes for BART after BART analyses have been submitted. Since EPA concluded that CAIR will provide more visibility improvement than BART, Xcel Energy believes Sherco Units 1 and 2 should not be given BART limits and instead CAIR should drive emission reductions. Nevertheless, a BART analysis has been performed as required for Sherco Units 1 and 2, and is presented in this report.

MPCA guidance for the BART analysis lists a presumptive  $\text{NO}_x$  limit of 0.15 lb/MMBTU for units such as Sherco Units 1 and 2. Sherco 1 currently utilizes an overfire air (OFA) system and burners that will not allow the unit to achieve the presumptive  $\text{NO}_x$  limit for BART. Sherco 2 utilizes low  $\text{NO}_x$  burners (LNB) and a separated/close coupled overfire air system to control  $\text{NO}_x$ . In response to the CAIR program, Xcel Energy is committed to the installation of LNBs, a separated/close coupled overfire air system, and a combustion optimization (CC) system for Sherco Unit 1 for  $\text{NO}_x$  control in 2007. All control options for Sherco 1 include the costs for these projects. Likewise, Xcel Energy is installing a computer based CC system for  $\text{NO}_x$  control for Sherco 2 in 2006. All control options for Sherco Unit 2 include the cost for this project. These changes to the boilers will bring  $\text{NO}_x$  emissions for Sherco Units 1 and 2 to 0.15 lb/MMBTU. Xcel Energy proposes to meet the presumptive limit of 0.15 lb/MMBTU at the stack, on a 30-day rolling average. The proposed changes will be complete by the end of 2007, and compliance demonstrated by the end of 2008.

There are no presumptive limits for  $\text{SO}_2$  for boilers with existing controls that achieve at least 50% removal.  $\text{SO}_2$  is controlled by wet flue gas desulfurization (FGD) systems (scrubbers) for each unit, which currently achieve 75% removal. Xcel Energy proposes

to retrofit the existing scrubbers with sparger tubes and lime injection. The applicable<sup>Attachment 2</sup> emission limit would be 0.12 lb/MMBTU at the stack, based on a 30-day rolling average. These changes would be in place by the end of 2012.

PM<sub>10</sub> is controlled by wet scrubbers and wet electrostatic precipitators (WESP). Xcel Energy notes that there are no controls at this time for condensable PM<sub>10</sub>. No technology would significantly improve the particulate control from current levels at Sherco Units 1 and 2. As the cost-effectiveness was so high for all options, no new technology is proposed for PM<sub>10</sub>. Because no new technology is proposed, no change to the permit limit is proposed.

Emission modeling predicts that Sherco Units 1 and 2 have the greatest effect on visibility in the Boundary Waters Canoe Area (BWCA), as compared to Voyageur National Park (VNP) and Isle Royale (IR), regardless of whether the effect is measured by the number of days with visibility impairment (visibility impairment > 0.5 deciview), or by the change in impairment at the 98<sup>th</sup> percentile. The proposed controls and visibility improvements (for the BWCA) are summarized in Table 1 below.

The proposed BART controls and emission limits will result in significant visibility improvement. This proposed control equipment also provides Xcel Energy flexibility in determining a compliance strategy for mercury control requirements under the Clean Air Mercury Rule (CAMR) and the Minnesota Mercury Reduction Act, as well as for CAIR Phase II.

Table 1. Summary of Proposed BART

Emission Unit	Proposed BART Control	Pollutant(s) Controlled	Proposed BART Emission Limit	Visibility Improvement on 98 <sup>th</sup> percentile Day <sup>1</sup>	Class I Area(s) Impacted
EU001/EU002	Retrofit existing FGD System with sparger tubes and lime injection for Sherco 1 & Sherco 2	SO <sub>2</sub>	0.12 lb/MMBTU	2.13	BWCA
EU001/EU002	LNB/SOFA – Sherco1; Combustion Optimization – Sherco 1 & Sherco 2	NO <sub>x</sub>	0.15 lb/MMBTU	2.11	BWCA

<sup>1</sup> Baseline 98<sup>th</sup> percentile was 2.68 dv

## 5.0 Conclusions

The Regional Haze Rule provides that a state participating in the Clean Air Interstate Rule (CAIR), which includes Minnesota, need not require BART-eligible electric generating units to install BART, because EPA's analysis concluded that CAIR controls are "better than BART" for electric generating units in states subject to CAIR. The MPCA stated that it would determine whether CAIR substitutes for BART after BART analyses have been submitted. Since EPA concluded that CAIR will provide more visibility improvement than BART, Xcel Energy believes Sherco Units 1 and 2 should not be given BART limits and instead CAIR should drive emission reductions. Nevertheless, Xcel Energy performed a BART analysis for Sherco 1 and 2 following the guidance provided by the MPCA and EPA. The analysis summary table (Table 22) follows this section.

Based on the BART analysis for SO<sub>2</sub>, Xcel Energy proposes to retrofit the existing wet scrubbers with sparger tubes and lime injection. The proposed emission rate is 0.12 lb/MMBTU at the stack, on a 30-day rolling average, to be met by the end of 2012. This rate is lower than the presumptive limit for similar units that are not achieving 50% removal. The proposed option would reduce SO<sub>2</sub> emitted from Sherco Units 1 and 2 on the order of 8,300 tons per year, and allows Xcel Energy flexibility in achieving required mercury reductions.

Xcel Energy has an obligation to its ratepayers to evaluate all expenditures to ensure they are prudent. New wet FGDs would increase auxiliary power needed in the plant, and would reduce energy available to consumers, requiring the need for generation from some other source. The total annualized cost for retrofitting the existing scrubbers with sparger tubes and lime injection is \$2,000,000, with a significant visibility improvement of 0.55 dv, or \$4,000,000/dv. Conversely, the total annualized cost to move to the next most effective control technology is approximately \$72,000,000, and this would further improve visibility by only 0.13 dv, or \$550,000,000/dv. Xcel Energy firmly believes that retrofitting the existing wet scrubbers with sparger tubes and lime injection will bring about the most economical visibility improvements.

Xcel Energy proposes a BART NO<sub>x</sub> limit of 0.15 lb/MMBTU at the stack, on a 30-day rolling average, to be achieved by installing combustion optimization systems for both Sherco Units 1 and 2, and low NO<sub>x</sub> burners and separated/close coupled overfire air for Sherco Unit 1. This is the presumptive limit for the category of electric generating units

into which Sherco Units 1 and 2 fit. The proposed controls would be installed by the end of 2007, and compliance with the proposed limit would be demonstrated by the end of 2008.

The total annualized cost for installation of combustion optimization systems for both units and installation of new low NO<sub>x</sub> burners and a separated/close coupled overfire air system for Sherco Unit 1 is \$2,700,000, with a significant visibility improvement of 0.57 dv, or \$5,000,000/dv. Conversely, the total annualized cost to move to the next most effective control technology is approximately \$29,000,000; that technology would further improve visibility by 0.31 dv, or \$95,000,000/dv. Xcel Energy firmly believes that the most economical visibility improvements will be brought about by the installation of new combustion optimization systems for Sherco Units 1 and 2 and the installation of new low NO<sub>x</sub> burners and a separated/close coupled overfire air system for Sherco Unit 1.

No particulate matter control technology would significantly improve the control from current levels at Sherco Units 1 and 2. The cost-effectiveness values are unreasonably high for all PM<sub>10</sub> options (>\$70,000/ton). No new limit is proposed for PM<sub>10</sub>.

Table 22. Emission Unit EU001/EU002: Summary of the Impacts Analysis for SO<sub>2</sub>, NO<sub>x</sub>, PM<sub>10</sub> Control Scenarios

Control Scenario #	Control Technology Evaluated	Emissions Performance Level (percent pollutant removed)	Baseline Emission Rate, tons/year	Expected Emissions Reductions, tons/year	Current Emission Rate, lb/MMBTU	Expected Emission Rate, lb/MMBTU	Total Annualized Control Cost, \$	Average Cost Effectiveness, \$/ton pollutant removed	Incremental Cost Effectiveness, \$/ton pollutant removed	Energy Impacts	Collateral Increase in Other Pollutants?	Non-Air Quality Environmental Impacts	Greatest Change in modeled visibility on 98 <sup>th</sup> Percentile day from baseline, dv
	SO <sub>2</sub>		SO <sub>2</sub>	NO <sub>x</sub>	SO <sub>2</sub>	NO <sub>x</sub>	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>x</sub>	PM <sub>10</sub>			
1	X	44%	14,652	6,500	0.34/0.20	0.15	2,700,000	400		No	No	No	2.11
2	X	70%	14,652	10,300	0.34/0.20	0.08	32,000,000	3,100	7,800	Yes	No	No	1.80
3	X	56%	14,975	8,300		0.12	2,000,000	200		No	No	No	2.13
4	X	67%	14,975	10,000	0.27	0.09	74,000,000	7,400	43,000	Yes	No	No	2.00

- Control Scenario 1: Combustion optimization/low NO<sub>x</sub> burners/separated OFA – Sherco Unit 1, Combustion optimization – Sherco Unit 2  
Control Scenario 2: Combustion optimization/low NO<sub>x</sub> burners/separated OFA /selective catalytic reduction – Sherco Unit 1,  
Control Scenario 3: Retrofit existing scrubbers with sparger tubes and lime injection – Sherco Units 1 and 2  
Control Scenario 4: Install new wet FGD systems – Sherco Units 1 and 2

The total annualized costs for each control scenario were obtained by adding the total annualized costs for each unit together for proposed options. For example, the total annualized cost for a new wet FGD system for Sherco Unit 1 was added to the total annualized cost for a new wet FGD system for Sherco Unit 2, and reported in the Total Annualized Control Cost column in the table above. The expected emissions reductions were calculated the same way, however all reported numbers are rounded.

**Table 23. Visibility Modeling: Baseline Model Results**

Control Scenario Class I Area		2002		2003		2004		2002-2004	
		98% dv	# days >0.5 dv	98% dv	# days >0.5 dv	98% dv	# days >0.5 dv	98% dv	# days >0.5 dv
Baseline	BWCA	2.60	85	2.93	87	2.77	91	2.68	263
	VNP	1.98	54	2.51	55	2.39	56	2.34	165
	IR	1.69	50	2.04	52	1.95	57	1.79	159

**Table 24. Visibility Modeling: Boundary Waters Results**

Control Scenario	2002		2003		2004		2002 through 2004	
	98 <sup>th</sup> % $\Delta$ dv	# of days > 0.5 dv	98 <sup>th</sup> % $\Delta$ dv	# of days > 0.5 dv	98 <sup>th</sup> % $\Delta$ dv	# of days > 0.5 dv	98 <sup>th</sup> % $\Delta$ dv	# of days > 0.5 dv
Baseline	2.60	85	2.93	87	2.77	91	2.68	263
Case 1	2.02	73	2.33	77	2.22	77	2.11	227
Case 2	1.74	63	1.95	74	1.94	69	1.80	206
Case 3	2.01	64	2.36	72	2.28	72	2.13	208
Case 4	1.92	64	2.51	69	2.09	73	2.00	206

**Table 25. Visibility Modeling: Voyageur National Park Results**

Control Scenario	2002		2003		2004		2002 through 2004	
	98 <sup>th</sup> % $\Delta$ dv	# of days > 0.5 $\Delta$ dv	98 <sup>th</sup> % $\Delta$ dv	# of days > 0.5 $\Delta$ dv	98 <sup>th</sup> % $\Delta$ dv	# of days > 0.5 $\Delta$ dv	98 <sup>th</sup> % $\Delta$ dv	# of days > 0.5 $\Delta$ dv
Baseline	1.98	54	2.51	55	2.39	56	2.34	165
Case 1	1.66	46	1.92	51	1.76	50	1.82	147
Case 2	1.48	41	1.74	50	1.59	45	1.59	136
Case 3	1.46	39	1.86	45	1.87	39	1.75	123
Case 4	1.54	45	1.89	44	1.78	39	1.65	128

**Table 26. Visibility Modeling: Isle Royale Results**

Control Scenario	2002		2003		2004		2002 through 2005	
	98 <sup>th</sup> % $\Delta$ dv	# of days > 0.5 $\Delta$ dv	98 <sup>th</sup> % $\Delta$ dv	# of days > 0.5 $\Delta$ dv	98 <sup>th</sup> % $\Delta$ dv	# of days > 0.5 $\Delta$ dv	98 <sup>th</sup> % $\Delta$ dv	# of days > 0.5 $\Delta$ dv
Baseline	1.69	50	2.04	52	1.95	57	1.79	159
Case 1	1.35	41	1.59	44	1.47	46	1.44	131
Case 2	1.20	39	1.40	36	1.30	42	1.30	117
Case 3	1.16	38	1.38	40	1.47	43	1.34	121
Case 4	1.22	38	1.37	35	1.73	45	1.37	118
1 & 3	0.90	30	1.11	23	1.07	34	0.98	87
2 & 3	0.71	24	0.91	19	0.84	26	0.82	69

**Xcel Energy's Sherburne County Generating Plant (Sherco)**  
**MPCA 5/19/09 report and subsequent Responses to Comments**

Xcel Energy's (Xcel) Sherburne County generating plant (Sherco) consists of three units with a total plant electrical output rating of 2,255 megawatts (MW). According to EPA's Clean Air Markets Database, in 2007, Sherco ranked #104 in the US in sulfur dioxide (SO<sub>2</sub>) emissions at 25,493 tons and #14 for nitrogen oxides (NO<sub>x</sub>) emissions at 25,683 tons. Unit 1 (690 MW net, installed in 1976) and Unit 2 (683 MW net, installed in 1977) are tangentially-fired. Units 1 and 2, the only BART-eligible units, each have a maximum rated heat input capacity of 7,111 mmBtu/hr. Sub-bituminous coal is the primary fuel for all three power boilers.

The air pollution control equipment for Units 1 and 2 consists primarily of spray towers (wet scrubbing) and wet electrostatic precipitators (WESPs) to control particulate (PM) and SO<sub>2</sub> emissions. In 2007 Xcel installed Low-NO<sub>x</sub> Burners (LNB), separated/close coupled Over-Fire Air (OFA) systems, and a combustion optimization system to reduce NO<sub>x</sub> emissions from Unit 1. For Unit 2 NO<sub>x</sub>, Xcel installed a computer-based combustion optimization system for the OFA system in 2006. These changes to Units 1 and 2 should allow Xcel to achieve a NO<sub>x</sub> emission rate of 0.15 lb/mmBtu.

Information provided by Xcel estimates that Sherco Units #1 & #2 currently cause 2.68 deci-Views (dV) of visibility impairment at the Boundary Waters Canoe Area (BWCA), 2.34 dV of visibility impairment at Voyageurs National Park (NP), and 1.79 dV of visibility impairment at Isle Royale National Park NP.

**Xcel BART Proposal**

SO<sub>2</sub>: Based on...incremental costs, the **most cost-effective option** for optimal SO<sub>2</sub> control is retrofitting the existing scrubbers with sparger tubes and lime injection...Xcel Energy firmly believes the most cost-beneficial visibility improvements will be brought about by retrofitting the existing wet scrubbers with sparger tubes and lime injection.

NO<sub>x</sub>: Based on...incremental cost, the **most cost-effective option** for NO<sub>x</sub> control for Unit 1 is the installation of a combustion optimization system, and LNB and SOFA. **Based on ...incremental cost**, the most cost-effective option for NO<sub>x</sub> control for Unit 2 is installation of a combustion optimization system... Xcel Energy firmly believes the most cost-beneficial visibility improvements will be brought about by installing new LNB, a separated/close coupled OFA system, and a combustion optimization system for Unit 1, and a combustion optimization system for Unit 2.

**MPCA BART Analysis**

Xcel was requested by the MPCA to perform a BART analysis for Sherco because the MPCA did not have sufficient information about planned emission reductions at the time facilities were notified that they were subject to BART (March 2006). A BART analysis dated October 27, 2006, for Sherco Units 1 and 2 was submitted to the MPCA by Xcel.1

The MPCA has determined that the NO<sub>x</sub> emissions limitation of 0.15 lb/mmBtu on a 30-day rolling average is BART for Sherco Units 1 and 2. The emission limits are achieved

with LNB and OFA at Sherco 1 and additional computerized combustion controls on Unit 2. The technology achieves the “presumptive BART” emissions rate, and does not prohibit or prevent the future installation of any known additional NO<sub>x</sub> control technology.

As shown in [MPCA's] Table 2, at this time SCRs are an order of magnitude more expensive than other NO<sub>x</sub> controls. Xcel determined that implementing SCRs on these units would be \$40 million (annualized) above the cost of proposed BART, and result in only 3,500 additional tons of NO<sub>x</sub> removal. Getting only 1.5 times the pollutant reductions at greater than ten times the cost is not cost-effective for BART.

In the case of Sherco, the incremental cost-effectiveness did not result in the selection of the cheapest control. Xcel described in its BART analysis an incremental cost curve with a period of small increases followed by the exponential cost increases. The BART technology chosen is generally the last technology on the more moderate portion of the curve.

The MPCA has determined that the SO<sub>2</sub> emissions limitation of 0.12 lb/mmBtu on a 30-day rolling average is BART for Sherco Units 1 and 2. The emission limit is achieved with the installation of sparger tubes in the existing scrubbers and the injection of lime to lower pH of the scrubbing system. The technology achieves the “presumptive BART” emissions rate, and does not prohibit or prevent the future installation of any known additional SO<sub>2</sub> control technology.

The MPCA has determined that the existing particulate control represents BART and the existing permit limit for PM<sub>10</sub> is an appropriate BART limit.

CALPUFF modeling was not rerun for this source. The 2018 regional-scale modeling does reflect the 2006 and 2007 combustion control upgrades to Units 1 and 2. The MPCA will include revised emission rates that reflect approved control upgrades for the 2012 State Implementation Plan report regional-scale modeling.

#### **MPCA Determination of the BART Limit**

The following limits represent the MPCA's determination of BART for Units 1 and 2.

<b>NO<sub>x</sub> Limit</b>	<b>SO<sub>2</sub> Limit</b>	<b>PM<sub>10</sub> Limit*</b>
0.15 lb/mmBtu	0.12 lb/mmBtu	0.09 lb/mmBtu
on a 30-day rolling average	on a 30-day rolling average	

\*PM10 limit includes filterable plus organic and inorganic condensibles.

#### **NPS BART Analysis**

Contrary to MPCA's assertion,<sup>1</sup> the BART Guidelines are **not** discretionary in this case. While the guidelines and the presumptive BART limits apply to Units #1 & #2, Xcel and

<sup>1</sup> MPCA response to comments, p 368.

MPCA must still conduct a complete, five-step analysis to determine if the presumptive limits are appropriate for this particular case. Although MPCA did not do so, Xcel did provide sufficient data for NPS to conduct an independent analysis.

The key to MPCA's BART proposal appears to reside in this statement: "...SCRs are an order of magnitude more expensive than other NO<sub>x</sub> controls. **Xcel determined** that implementing SCRs on these units would be **\$40 million** (annualized) above the cost of proposed BART, and result in only **3,500 additional tons** of NO<sub>x</sub> removal. Getting only **1.5 times the pollutant reductions** at greater than **ten times the cost** is **not cost-effective** for BART." (emphasis added) We shall address each point of that statement in our discussion below.

**NO<sub>x</sub>:** Xcel/MPCA have proposed that the NO<sub>x</sub> emissions limitation of 0.15 lb/mmBtu on a 30-day rolling average is BART for Sherco Units 1 and 2. The emission limits are achieved with LNB and OFA at Sherco 1 and additional computerized combustion controls on Unit 2. According to Xcel, the emission reductions would result in 0.57 dV of visibility improvement at BWCA at a cost-effectiveness ratio of \$5 million/dV, and 1.44 dV of improvement across all three Class I areas.

#### Step 1 - Identify all Available Retrofit Control Technologies

Xcel identified a reasonable range of control options.

#### Step 2 - Eliminate Technically Infeasible Options

Xcel rejected several options to reduce NO<sub>x</sub> for the following reasons:

- Mobotec's Rotamix<sup>®</sup> system, LoTOx<sup>®</sup> and the ECOTUBE<sup>®</sup> approaches were rejected because neither has been demonstrated on units this large. However, Xcel provided no reason why none of these technologies could be transferred<sup>2</sup> from similar, but smaller applications, such as at MN Power's Taconite Harbor facility.
- NO<sub>x</sub>Star<sup>®</sup> and gas re-burn were rejected due to there being no natural gas line to the plant.

#### Step 3 - Evaluate Control Effectiveness

**Xcel and MPCA have underestimated the effectiveness of SCR** by assuming that SCR can only achieve 0.08 lb/mmBtu on an annual basis. (Xcel estimates that this approach would result in 0.88 dV of visibility improvement at BWCA and 2.14 dV of improvement across all three Class I areas.) Not only is this assumption unsupported, it is also inconsistent with the BART limit of 0.07 lb/mmBtu proposed by MPCA for the Minnesota Power Clay Boswell Unit #3 (which has higher uncontrolled NO<sub>x</sub> emissions). And, MN Power has stated in its Taconite Harbor BART analysis that SCR is capable of achieving 0.05 lb/mmBtu.

**We are providing information from EPA's CAM database (in Appendix A) that demonstrates that 21 tangentially-fired boilers similar to the Sherco units can achieve 0.05 lb/mmBtu or lower when equipped with SCR.**

<sup>2</sup> see the BART Guidelines on technical feasibility

MPCA has stated that SCR would result in only 3,500 additional tons of NO<sub>x</sub> removal. Even if we relied upon Xcel's estimates, the difference between the MPCA/Xcel proposal for BART and their estimates for NO<sub>x</sub> removed by SCR totals 3,800 tons per year. If we recognize that SCR can reduce NO<sub>x</sub> to 0.05 lb/mmBtu (or less) on an annual basis and apply MPCA's mathematical approach, true utilization of SCR would remove an additional 1,644 tpy for a total of 5,444 tpy more reduction from SCR than from the MPCA/Xcel BART proposal. So, instead of obtaining only the "1.5 times the pollutant reductions" of the MPCA/Xcel BART proposal as stated by MPCA, full utilization of SCR would provide more than 1.8 times the proposed reductions.

#### Step 4 - Evaluate Impacts and Document Results

MPCA states that SCR is "**not cost-effective** for BART." The core purpose of the BART program is to improve visibility in our Class I areas. **BART is not necessarily the most cost-effective solution** but instead, BART represents a broad consideration of technical, economic, energy, and environmental (including visibility improvement) factors. We believe that it is essential to consider both the degree of visibility improvement in a given Class I area as well as the cumulative effects of improving visibility across all of the Class I areas affected.

**MPCA states that, "Xcel determined that implementing SCRs on these units would be \$40 million (annualized) above the cost of proposed BART."** Even taken at face-value, that statement is false. Using the costs presented by MPCA/Xcel, the total annualized cost for combustion controls plus SCR at both Sherco #1 + #2 is \$33 million, and the difference between total annualized costs for the MPCA/Xcel BART proposal and SCR is \$30 million.

Additionally, **Xcel and MPCA have overestimated the cost of SCR.** EPA guidance states, "The basis for equipment cost estimates also should be documented, either with data supplied by an equipment vendor (i.e., budget estimates or bids) or by a referenced source (such as the OAQPS Control Cost Manual). In order to maintain and improve consistency, cost estimates should be based on the OAQPS Control Cost Manual, where possible."

Instead, Xcel (and, by default, MPCA) relied upon the CueCost program to generate cost estimates. Xcel included some very questionable and unsupported assumptions in its input to the CueCost model, which resulted in some extraordinarily high cost estimates. For example, Xcel chose the highest available retrofit factor with no justification or explanation. Instead of relying upon the 7% interest rate recommended by the Cost Manual, Xcel used higher values, and Xcel ignored the availability of the Chemical Engineering Cost Index (recommended by EPA) and substituted its own (unsupported) value. The result of these and other questionable assumptions and estimates<sup>3</sup> is that, on a cost/ton basis, the Operation and Maintenance (O&M) costs for SCR at Sherco are two –

<sup>3</sup> For example, Xcel estimated a catalyst cost of \$356 per cubic foot compared to MN Power's estimate of \$189 cubic foot.

four times greater than the O&M costs estimated by MN Power for SCR at its much smaller Boswell Unit #3.

Our contention that the Cost Manual should be the primary source for developing cost analyses that are transparent and consistent across the nation and provide a common means for assessing costs is further supported by this November 7, 2007, statement from EPA Region 8 to the North Dakota Department of Health:

The SO<sub>2</sub> and PM cost analyses were completed using the CUECost model. According to the BART Guidelines, in order to maintain and improve consistency, cost estimates should be based on the OAQPS Control Cost Manual. Therefore, these analyses should be revised to adhere to the Cost Manual methodology.

We believe that this guidance from EPA directs Xcel and MPCA to revise their cost analyses to reflect a more-consistent use of the Cost Manual, or, at least, support and document their estimates.

NPS followed the EPA guidance and generated estimates of SCR costs based upon application of the OAQPS Control Cost Manual. We were able to estimate capital costs of about \$66 and \$49 million (\$95/kW and \$71/kW) for units #1 and #2, respectively. (Compared to the Xcel estimates of \$105 and \$90 million), annual costs of about \$7.6 and \$6.5 million (compared to the Xcel estimates of \$18 and \$15 million), and cost-effectiveness of \$1,300/ton and \$1,400/ton of NO<sub>x</sub> removed (compared to the MPCA estimates of \$2,500 and \$4,500 per ton).<sup>4</sup> **Instead of the \$33 million in annual costs presented by Xcel, and the \$43 million implied by MPCA, application of the BART Guidelines leads to a much lower total annualized cost of \$15 million.**

With respect to MPCA's statement that application of SCR would result in "greater than **ten times the cost**" of its BART proposal, one can simply compare the \$2.7 million annual cost of the MPCA proposal to the \$15 million annual cost of SCR estimated according to the BART Guidelines.

It is clear that **MPCA has based its cost analysis entirely upon the incremental cost** of SCR versus its BART proposal. While it is appropriate to consider incremental costs in addition to average costs, we have a concern with the over-emphasis placed by MPCA upon this factor and with the way in which the incremental cost analysis was conducted.<sup>5</sup> Because, in most cases, the cost of pollution control rises exponentially with control efficiency, the slope of the curve will also increase. For this reason, rigid use of incremental cost effectiveness will always result in the choice of the cheapest option if carried to this extent. (For example, if this approach were used to evaluate particulate controls, it is likely that all controls more expensive than a multiple cyclone would be rejected.) According to the NSR Workshop manual, "As a precaution, the difference in incremental costs among dominant alternatives cannot be used by itself

<sup>4</sup> MN Power estimated \$3,200/ton to add SCR at its Boswell Unit #3.

<sup>5</sup> EPA BART Guideline: "You should consider the incremental cost effectiveness in combination with the average cost effectiveness when considering whether to eliminate a control option..." "You should exercise caution not to misuse these [average and incremental cost effectiveness] techniques... [but consider them in situations where an option shows]...slightly greater emission reductions..."

to argue one dominant alternative is preferred to another.” Instead, it should be used to compare closely performing options.

We believe that our cost estimates, based upon application of the EPA BART Guidelines, are more “transparent” and more realistic than those presented by Xcel/MPCA and warrant further consideration of SCR by MPCA.

As noted above, MPCA justifies its decision by stating, “...the incremental cost-effectiveness did not result in the selection of the cheapest control. Xcel described in its BART analysis an incremental cost curve with a period of small increases followed by the exponential cost increases. The BART technology chosen is generally the last technology on the more moderate portion of the curve.” If that is the case, then MPCA must compare the incremental cost of adding SCR at Sherco to the incremental cost of adding SCR at Boswell #3 and show that it is greater at Sherco.

On page 377 of its responses to comments, MPCA states that, “The MPCA believes that it has appropriately weighed the incremental costs in selecting BART for this facility, as described earlier. The outcome of the MPCA’s deliberation is not unlike those made for similar-sized units in other states.” That depends upon which states one looks to. For example, Wyoming has proposed SCR as BART on the 330 MW tangentially-fired Naughton Unit #3, and for Reasonable Progress on the 530 MW Bridger Units #3 & #4. And, Oregon has proposed SCR on the 617 MW Boardman plant as part of its Reasonable Progress strategy. And, of course, Boswell Unit #3 will meet 0.07 lb/mmBtu with SCR.

#### Step 5 - Evaluate Visibility Impacts

Our review of the Xcel modeling results indicates that NO<sub>x</sub> emissions are more culpable for impacting visibility than SO<sub>2</sub> emissions; this finding indicates that the value of reducing NO<sub>x</sub> is greater than for SO<sub>2</sub> and this should be considered in the BART determination.

As noted above, Xcel did provide information on the benefits of reducing NO<sub>x</sub> (and SO<sub>2</sub>) at the BWCA. For example, Xcel estimated that addition of SCR to Sherco #1 & #2 would reduce NO<sub>x</sub> emission by 10,400 tpy and would result in 0.88 dV of visibility improvement at BWCA and 2.14 dV of improvement across all three Class I areas.<sup>6</sup> Xcel then compared the additional improvement that would result from SCR to the additional cost and estimated this “incremental” cost to be \$95 million per dV. It appears that Xcel (inappropriately) relied heavily on this incremental cost analysis to eliminate SCR as a BART option.

In the case of NO<sub>x</sub> control, it is especially important to evaluate the total option, not just the most expensive part. All new pulverized coal (PC)-fired EGUs of which we are aware use combustion controls (as proposed by Xcel) in combination with SCR. Although this increases the capital cost of the NO<sub>x</sub> control system, by lowering the amount of NO<sub>x</sub> that

<sup>6</sup> Visibility at BWCA improves by 0.00009 dV per ton of NO<sub>x</sub> removed, and by 0.00022 dV summed across all three Class I areas.

the SCR must treat, annual operating costs can be reduced substantially. Thus, NO<sub>x</sub> controls for a modern PC boiler will consist of a relatively inexpensive combustion control system followed by a relatively expensive SCR. As states evaluate the cost-effectiveness of those NO<sub>x</sub> control systems as part of their routine Best Available Control Technology analyses, we are not aware of any state that has ever suggested that the combustion controls and SCR should be evaluated separately. At Sherco, the "average cost effectiveness" analysis (as recommended by EPA) would yield \$30 - \$54 million/dV at BWCA using the Xcel cost estimates, and about \$16 million/dV at BWCA using the NPS estimates derived from the EPA Cost Manual.

Compared to the typical control cost analysis in which estimates typically fall into the range of \$2,000 - \$10,000 per ton of pollutant removed, spending millions of dollars per dV to improve visibility may appear extraordinarily expensive. However, our compilation of BART analyses across the U.S. reveals that the average cost per dV proposed by either a state or a BART source is \$9 - \$19 million<sup>7</sup> with a maximum of almost \$50 million per dV proposed by Colorado at the Martin Drake power plant in Colorado Springs.

Because Sherco causes visibility impairment in at least three Class I areas, it is appropriate to consider the improvements in all of those areas to properly assess the benefits of reducing emissions at Sherco. With application of SCR at Sherco, the "average cost effectiveness" would yield \$12 - \$22 million/dV summed across the three Class I areas using the Xcel cost estimates, and about \$7 million/dV using the NPS estimates derived from the EPA Cost Manual. These values fall well within the range of reasonableness established by other states and BART sources.

SO<sub>2</sub>: Xcel/MPCA have proposed that the SO<sub>2</sub> emissions limitation of 0.12 lb/mmBtu on a 30-day rolling average is BART for Sherco Units 1 and 2. The emission limit is achieved with the installation of sparger tubes in the existing scrubbers and the injection of lime to lower pH of the scrubbing system. According to Xcel, the emission reductions would result in 0.55 dV of visibility improvement at BWCA at a cost-effectiveness ratio of \$4 million/dV, and 1.59 dV of improvement across all three Class I areas.<sup>9</sup>

While we agree that it generally makes sense to upgrade existing scrubbers, we believe that the upgraded Sherco scrubbers may be capable of achieving greater emission reductions than proposed by Xcel/MPCA. Based upon the coal quality data provided by Xcel, we estimate that current uncontrolled SO<sub>2</sub> emissions are 0.98 lb/mmBtu of this sub-bituminous coal. Therefore, the proposed 0.12 lb/mmBtu BART limits would represent an overall control efficiency of about 88%. By comparison, data in our BART compilation indicates that North Dakota has proposed BART limits for several EGUs that

<sup>7</sup> <http://www.wrapair.org/forums/ssjf/bart.html>

<sup>8</sup> For example, PacifiCorp has stated in its BART analysis for its Bridger Unit #2 that "The incremental cost effectiveness for Scenario 1 compared with the baseline for the Bridger WA, for example, is reasonable at \$580,000 per day and \$18.5 million per deciview."

<sup>9</sup> Visibility at BWCA improves by 0.00007 dV per ton of NO<sub>x</sub> removed, and by 0.00019 dV summed across all three Class I areas.

represent higher control efficiencies (Coal Creek @ 94%, Stanton @ 90%, M.R. Young @ 95%). For example, if Sherco were to upgrade its scrubbers to achieve 91% control, it could meet the same 0.09 lb/mmBtu limit proposed for Boswell #3. Xcel should show how it determined that the proposed scrubber upgrades could achieve only 88% control and why they cannot do as well as MN Power.

*PM<sub>10</sub>*: The MPCA has determined that the existing particulate control represents BART and the existing permit limit (0.09 lb/mmBtu) for PM<sub>10</sub> is an appropriate BART limit. Considering that this limit is more than six times higher than the limit proposed for MN Power's Boswell #3, Xcel and MPCA should have evaluated the existing wet electrostatic precipitators for potential upgrades.

### Conclusions & Recommendations

- The BART limits proposed by Xcel/MPCA will allow Sherco to continue to cause visibility impairment at BWCA, Voyageurs NP, and Isle Royale NP.
- While reducing both NO<sub>x</sub> and SO<sub>2</sub> emissions from Sherco are important, on a per-ton basis, reducing NO<sub>x</sub> provides greater visibility benefits than reducing SO<sub>2</sub>.
- It is important that regulatory agencies provide a level playing field and that they treat similar emission sources in a similar manner, unless exceptions are properly documented and justified. MPCA has provided no rationale for allowing Xcel to avoid SCR installation at Sherco while requiring MN Power to install SCR at its Boswell Unit #3.
- Xcel and MPCA have underestimated the ability of SCR to reduce NO<sub>x</sub> emissions and overestimated its costs. We believe that a proper five-factor analysis would conclude that SCR at 0.05 lb/mmBtu is BART for Sherco #1 & #2.
- Xcel/MPCA have provided no justification for the proposed SO<sub>2</sub> BART limit. We believe that the proposed scrubber upgrade may be able to achieve a lower SO<sub>2</sub> limit. For example, MPCA has proposed SO<sub>2</sub> limits of 0.09 lb/mmBtu at Boswell #3 and 0.06 lb/mmBtu at Northshore #2.
- Xcel/MPCA should evaluate potential upgrades to the existing wet ESPs.

The overarching principle driving the MPCA proposal is summed up in this statement:

In addition to addressing BART at Sherco, Xcel has completed major projects within its generating system in Minnesota that have reduced air pollution substantially. Xcel has completed the retrofit of SCR and spray dryer/fabric filter at the Allen S King station in Oak Park Heights, and repowered the High Bridge and Riverside stations by retiring the coal fired units and constructing natural gasfired combined combustion turbines. This entire project, titled "Metropolitan Emissions Reduction Project" (MERP) and completed in 2010 with the demolition of Riverside coal units, results in the reduction of about 22,000 tons of NO<sub>x</sub> and 38,000 tons of SO<sub>2</sub>.

While we are pleased that the citizens of the Twin-Cities metropolitan area are receiving some relief from Xcel's emissions, Xcel still must address its impacts in Voyageurs and Isle Royale National Parks.



Re: FLM analysis of MN emissions 

Matthew Rau to: John Summerhays

11/28/2011 01:05 PM

John,

I do not have a city for Isle Royale as it is on Lake Superior. The driving distance from Becker, Minnesota (Sherco) to Grand Portage, Minnesota is 475 km. I would guess it is about 500 km from Sherco to Isle Royale.

-- Matt

John Summerhays

Do you know the distance from Sherco to Isle R...

11/28/2011 12:22:41 PM

From: John Summerhays/R5/USEPA/US  
To: Matthew Rau/R5/USEPA/US@EPA  
Date: 11/28/2011 12:22 PM  
Subject: Re: FLM analysis of MN emissions

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Do you know the distance from Sherco to Isle Royale? Curiously, this is the one of its 3 affected Class I areas that it least affects.

Martha Keating

Hi John and Matt - I received Trent's email with t...

11/28/2011 09:48:01 AM





**Fw: meeting on RAVI , Better than BART , and Sherco**  
John Summerhays to: Douglas Aburano, John Mooney  
Cc: Matthew Rau, Pamela Blakley

11/30/2011 03:25 PM

FYI. The only addition I would make is Pam.

----- Forwarded by John Summerhays/R5/USEPA/US on 11/30/2011 03:24 PM -----

From: Todd Hawes/RTP/USEPA/US  
To: John Summerhays/R5/USEPA/US@EPA  
Cc: Martha Keating/RTP/USEPA/US@EPA  
Date: 11/30/2011 01:37 PM  
Subject: meeting on RAVI, Better than BART, and Sherco

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I've been tasked with setting up a meeting with Janet McCabe on all things RAVI. Whom do I need to invite from R5? - I have Cheryl Newton, Doug Aburano, Steve Rosenthal, John Mooney, Matt Rau, and John Summerhays. Is there anybody else? We will also likely have to pre-brief Steve Page next week, so the same invitee list will apply. There is also an informal meeting with Anna Wood, but no invitee list is needed there. Martha will be working with you on the details of the briefing(s).

Todd Hawes  
Air Quality Policy Division, OAQPS, EPA  
(919) 541-5591

11/30/11 1:37P

&

11/30/11

3:25P





**FW: Minntac Line 6 Low NOx Final Report**

Wickman, Trent to: Matthew Rau, John Summerhays

Cc: "Don Shepherd (Don\_Shepherd@nps.gov)"

12/09/2011 08:46 AM

1 attachment



12-1-2011 Minntac Line 6 Low NOx Main Burner Final Report.pdf

Here is more info regarding the NOx reductions Minntac has achieved over the past few years. These are applicable to the MI taconite BART determinations

Trent Wickman, P.E.  
Air Resource Management  
Great Lakes National Forests - Eastern Region  
USDA Forest Service  
stationed on the - Superior National Forest  
8901 Grand Avenue Place  
Duluth, MN 55808  
ph# 218-626-4372  
cell# 218-341-8646  
fx# 218-626-4398  
twickman@fs.fed.us

From: Baumann, Suzanne (MPCA) [mailto:suzanne.baumann@state.mn.us]  
Sent: Thursday, December 08, 2011 3:01 PM  
To: Jiang, Hongming (MPCA); Seltz, Owen (MPCA); Wickman, Trent; Don\_Shepherd@nps.gov; David\_Pohlman@nps.gov  
Subject: Minntac Line 6 Low NOx Final Report

Attached for your review is the final report for the Line 6 Low NOx Main Burner at Minntac.

Please let me know if it would be useful to set up a call with (or without) Minntac to discuss.

Thank you,  
Suzanne





**Minnesota Draft Supplemental SIP**  
Neuschler, Catherine (MPCA) to: Matthew Rau  
Cc: John Summerhays, Kathleen Dagostino

12/13/2011 04:51 PM

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History: This message has been forwarded.

Matt, John, and Kathleen -

Attached to this email is the draft of Minnesota's Supplemental Regional Haze SIP, which includes the BART limits for the taconite facilities, a TR=BART determination, and a change to Minnesota's long-term strategy.

The public notice will be published in the State Register on Monday, December 19. The comment period will go until February 3. The SIP will be on the agenda for the MPCA Citizens' Board meeting in March, which is scheduled for March 27, 2012. (The public notice indicates this, and we will use that as the public meeting for the SIP.)

After finalization at the Board meeting, we will get you a final version as soon as possible in early April.

Let me know if you have questions or would like additional information. We can provide more detailed statistical analysis for the limits if that is needed.

~Catherine

Catherine Neuschler  
Air Policy  
Minnesota Pollution Control Agency  
651-757-2607  
catherine.neuschler@state.mn.us



Supplemental BART Limits Submittal Draft.pdf

